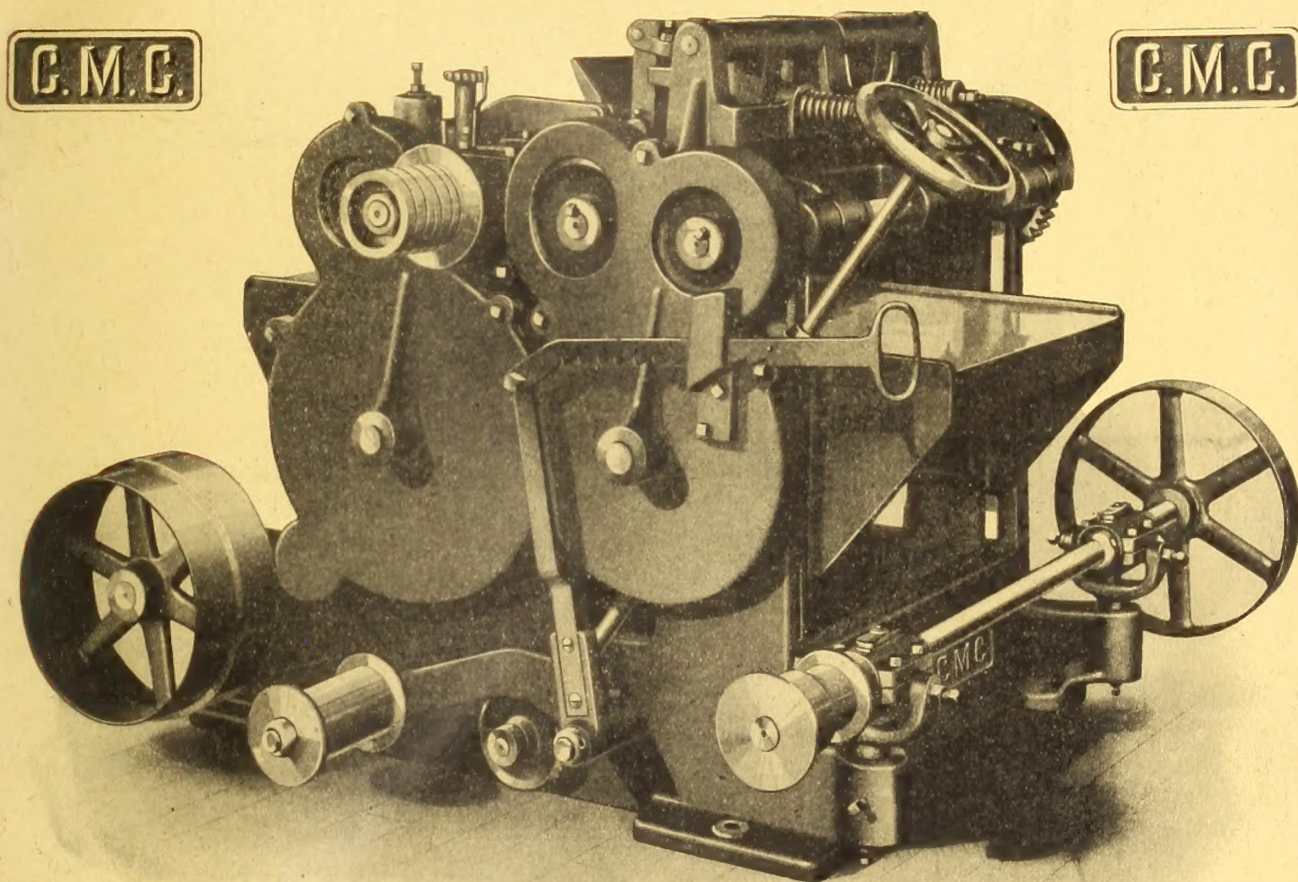


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CANADIAN WOODWORKER *and* Furniture Manufacturer

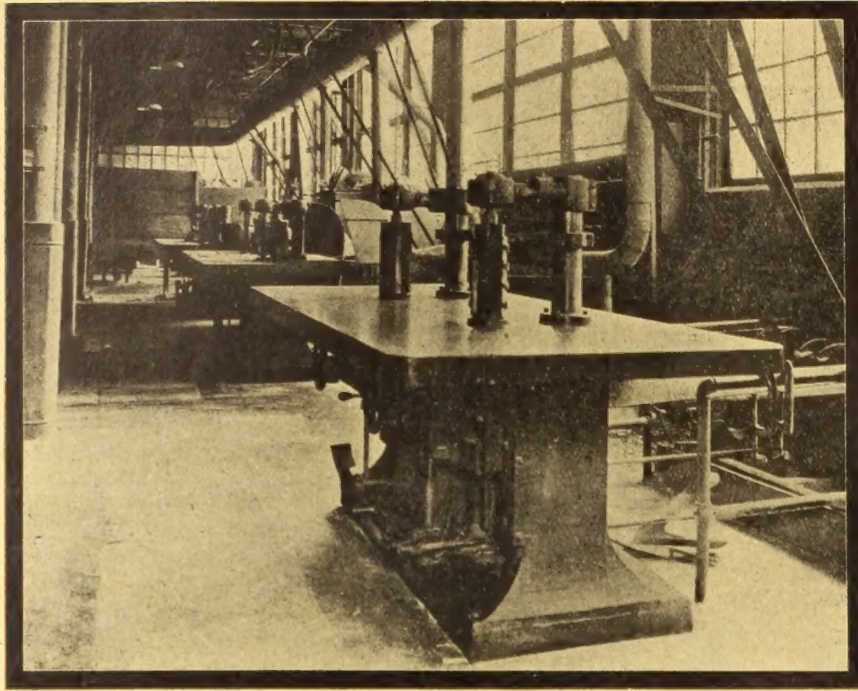


No. 220 Single Surface Planer

A compact, heavy cutting, strong feeding machine.
Capacity 26" x 8". Special bulletin sent upon request.

CANADA MACHINERY CORPORATION, LIMITED, GALT, ONTARIO

Toronto Office and Warerooms, Brock Ave. Subway



Buss Shapers in the Cadillac Motor Car Plant, No. 3.

NO. 11 OF A SERIES OF S K F USERS

Buss shapers are in use in a number of very prominent factories. They are virtually troubleproof; every important bearing, in machine, countershaft and loose pulley, is an S K F Ball Bearing.

Mr. M. Everett Dick, of the Buss Machine Works, in speaking of the machine said: "While a few years ago we were confronted with the proposition that this firm and that firm does not make ball bearing machines, we do not hear much of this argument to-day. Possibly the automobile industry has helped the woodworking manufacturer to fall in line with a bearing that will stand high speed, does not need oiling as often, and a bearing that is free from wear."

In speaking of the countershaft he said: "We have yet to receive the first complaint from any of our countershafts or loose pulleys that have been put on the market with your ball bearing equipment. They cut the power load 50% and our customers are all well satisfied."

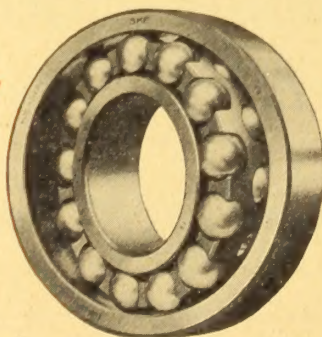
CANADIAN SKF COMPANY
LIMITED

47 King St. W., Toronto, Ont.

412 St. James St. West, Montreal.

295

SKF



**BALL
BEARINGS**

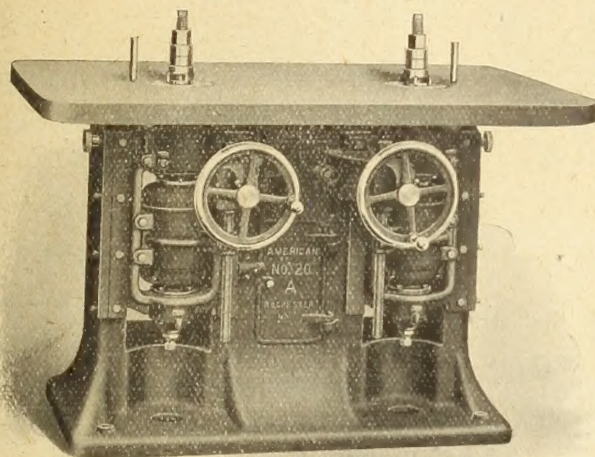
AMERICAN WOOD WORKING MACHINERY CO.

ROCHESTER, N. Y.

SALES OFFICE FOR BRITISH COLUMBIA, PORTLAND OREGON
 AGENTS FOR THE REST OF CANADA GARLOCK-WALKER MACHINERY CO., TORONTO
 AGENTS FOR GREAT BRITAIN THE PROJECTILE CO., LONDON

FIRST IN QUALITY

American Motor Driven Woodworking Machines



The American New Motor Spindle Shaper is the latest machine in the shaper line offered to the woodworking trade.

The absence of countershafts, the saving of floor space, the elimination of belts, flexibility of operation and economy of power and op-

erating expense are all in favor of this machine.

Catalog Announcement

In a short time our New Catalog will be ready for distribution. This is the 12th Edition. The 11th Edition of this Catalog was taken so quickly that we didn't anticipate the New Edition soon enough. Get your name in early for a copy of the 12th Edition.

COUPON

Garlock Walker Machinery Co.
Toronto, Canada

Please send us a copy of the New American 12th Edition Catalog. We are in the market for the following machines:—

.....

Signed

Town Province

CANADIAN



SALES AGENTS

Garlock-Walker Machinery Company

Limited

32 Front Street West, TORONTO, ONT.

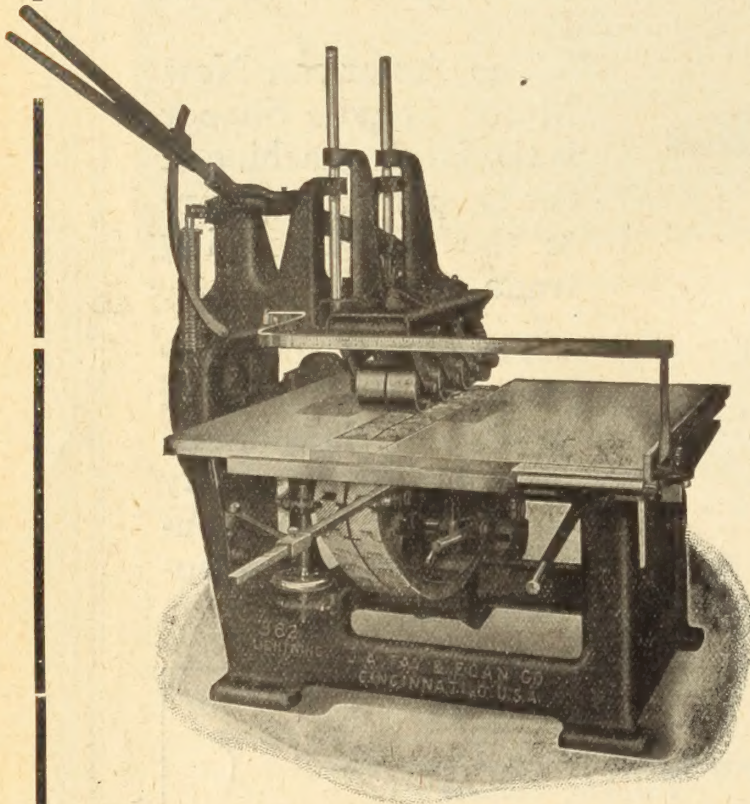
Toronto

Montreal

Winnipeg

10% Saving in Lumber Guaranteed Our No. 362 Straight Edge Ripping and Jointing Machine

is superseding all other methods of utilizing short, narrow stock



This machine in one operation rips to width, makes a perfectly straight edge and joints the board so that core stock for veneer tops and panels, kitchen cabinets, tables, caskets, cedar chests, piano cases, furniture, and other work of this class can be glued up right from the saw, eliminating the extra handling and glue jointer operation cost, and saving from $\frac{1}{8}$ " to $\frac{1}{4}$ " of lumber on every joint.

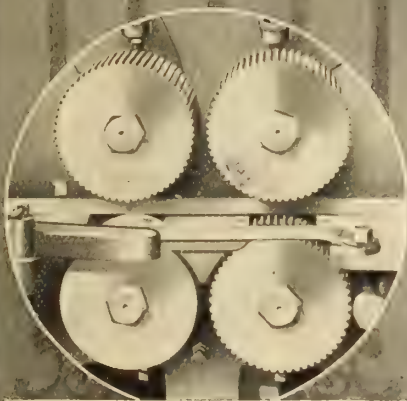
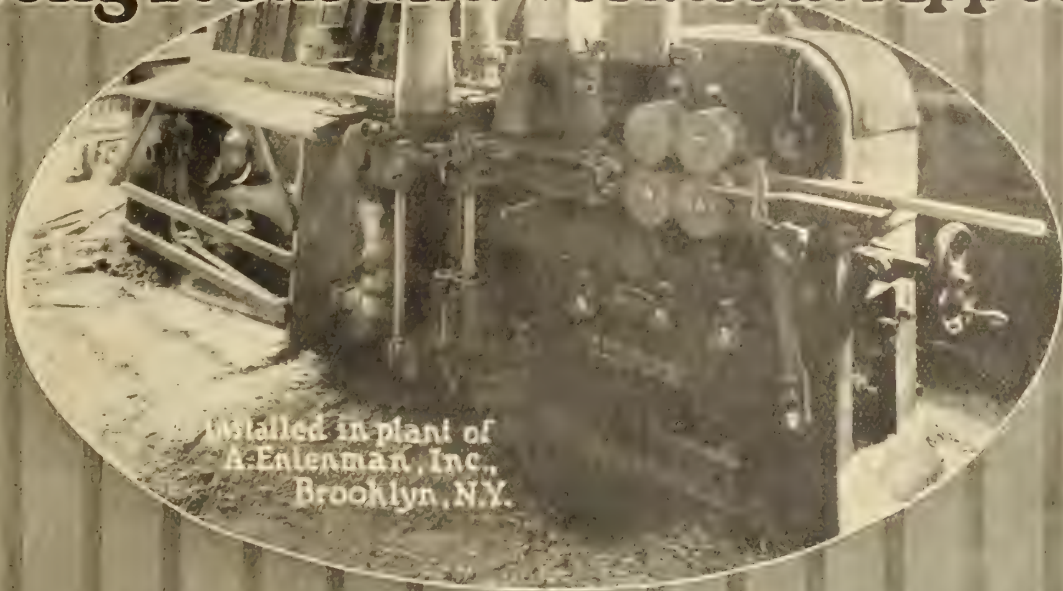
NOTE THE DISTINCTIVE FEATURES

1. Instantaneous adjustment of all rolls easily made and automatically locked at any point.
2. Spring counterbalance makes roll adjustment easy.
3. Face of rolls and chains is 7 in. wide, this greater bearing surface holding board absolutely straight.
4. Saw arbor easily accessible for oiling.
5. Six feed changes without complicated gear box, controlled by lever at in-feed end.
6. Adjustable sight bar for long stock.
7. Double feed chain of flat milled links, each link removable and interchangeable.
8. Self-oiling device for chains.
9. Chain adjustable above table for rough, crooked or finished stock and has steel take-up gibs for wear.
10. Cast iron chute for removing sawdust to exhaust connections.
11. Has unlimited space for building up panels to right of saw, and large clearance for returning stock to left of saw.
12. Two rolls before and two after the saw, absolutely preventing any twisting on either long or short stock.
13. Saw acts from below, eliminating vibration, and does not throw slivers and dust on work and into operator's face.
14. Saw can be taken off by lifting plate—no bolts or screws to loosen and setting of machines is not disturbed in the least.
15. Automatic locking fence with roll to facilitate handling stock, and indicator to show exact setting.
16. Self-contained countershaft—machine can be belted from any direction or direct connected to motor.

*The greatest time, labor and lumber saver of recent years
Our Bulletin tells you more about it*

Jackson, Cochrane & Co., Kitchener, Ont.

Strong Teeth and Voracious Appetite



Section of "C-3"
showing strong
and positive feed

"The Invariable Choice
of the Man Who Knows"



Type 3-C Moulder

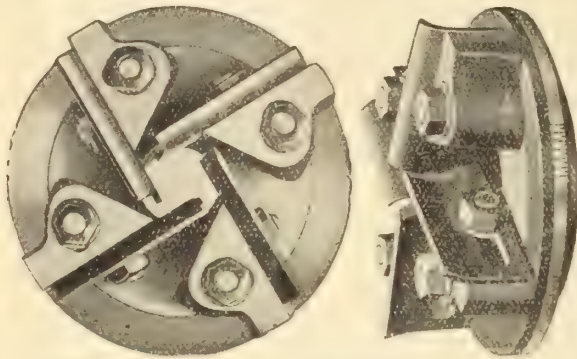
combines strength, accessibility, and speed to a remarkable degree. The capacity of this machine for handling the smaller mouldings is unequalled.

Feedworks have many unique features which add greatly to their strength. Entirely open side so that the utmost accessibility is secured. Reversible steel plate on working bed gives four ground surfaces and many times the wear of the ordinary bed. It is the last word in moulders.

Send for free, detailed, illustrated, circular

P. B. Yates Machine Co. Ltd.

HAMILTON, ONT. CANADA
U. S. Plant—BELOIT, WIS.

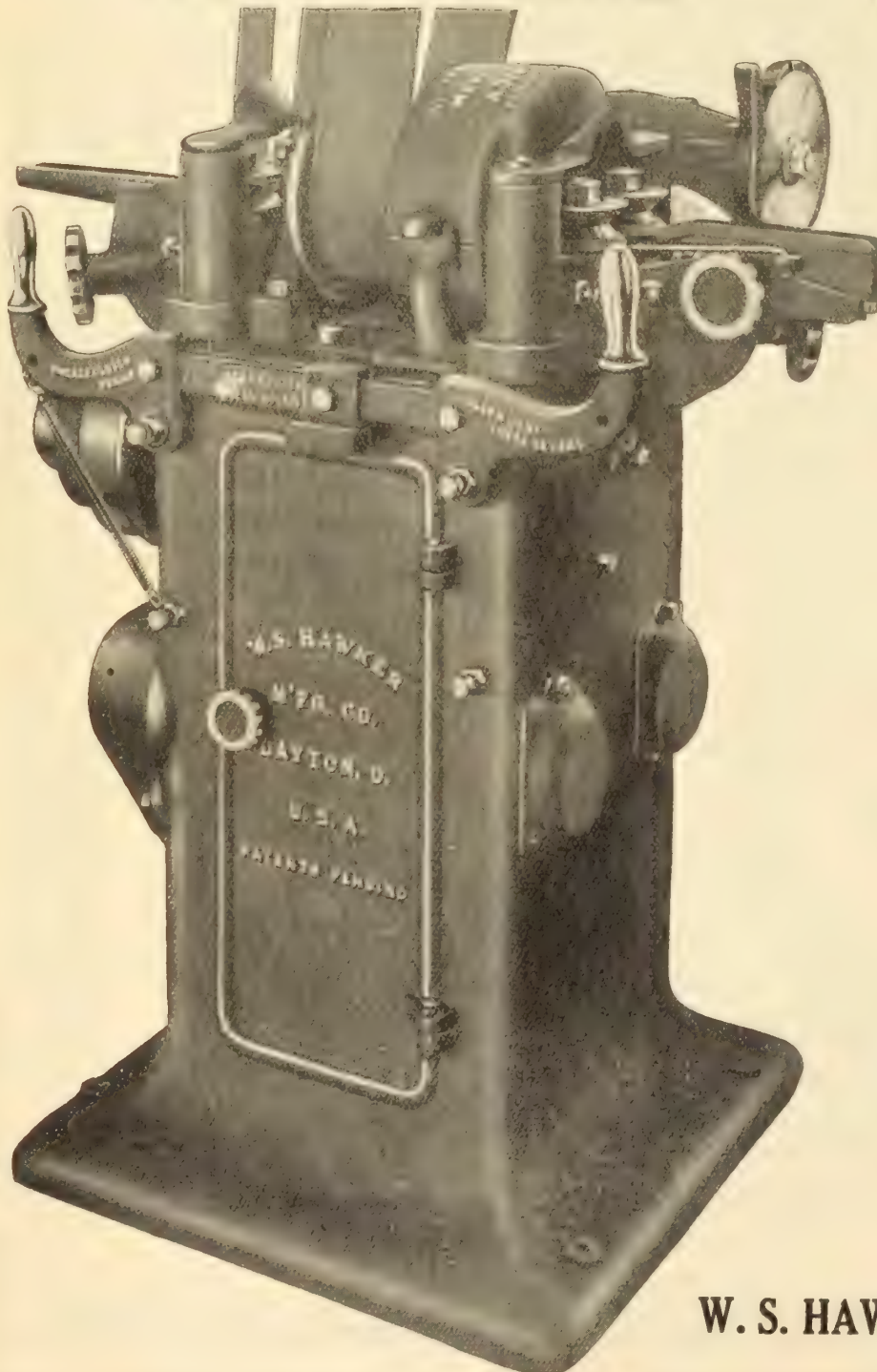


UNIVERSAL ADJUSTABLE CUTTER HEAD Patented.
Infringements (maker or user) will be vigorously prosecuted.

Two Heads

that have put
100% more profit
in the production
of Dowel Stock.

FOR SHIP TREENAILS



W. S. HAWKER.

Inventor and Designer of the World's most
efficient Tubular Turning Machinery

THE

Money Maker Adjustable Rod and Dowel Machine

The machine that is sent under a guarantee
to show you a gain of from 100 to 400 per cent.
before you buy it.

The improved dowel machine that 90 per
cent. of the largest and oldest machinery build-
ers and dealers now endorse and recommend in
preference to the solid chuck machines they
themselves previously built.

One cutter head turns from 1/4 in. to 2 in.
diameter.

Turns hard or soft wood equally well.

Handles heavy, oversized squares.

No choking of the cutter head.

Smooth stock.

Accurate sizes.

Works stock as short as five inches.

Rolls automatically centre variations in
squares.

Machines built to turn from 1/8 to 6 in.

We want to hear from every user of a solid
chuck dowel machine.

We can save you from one dollar out of
every two, to four out of every five, that the
operation of solid chuck machines costs you.

Engagements for competitive test solicited.

Formal orders not solicited. All sales made
after demonstration.

The only question is, are you willing to cut
cost of your dowel turning to one-half or one-
third of what it costs with any make of solid
chuck machine?

Machine delivers the goods before you buy.

State conditions of stock closely.

Special conditions require special equipment.

W. S. HAWKER MFG. COMPANY
DAYTON, OHIO.

The "Shimer Limited" Expansion Head

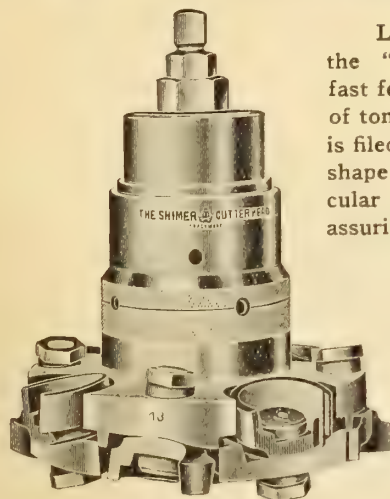


Fig. 627

Let us draw your attention to the advantages of using the "SHIMER CUTTER HEAD" for general Mill and fast feed Planer work. The Cutter is turned to cut the shape of tongue and groove desired, so that to sharpen the cutter it is filed or ground on its face, guaranteeing the user the same shape of cut during the life of the cutter. The bit being circular has from $3\frac{1}{2}$ in. to 5 in. cutting length to the cutter, assuring long wearing life to the cutters.

Note that the cutter, being fastened to a concave seat on a compound angle, assures the user of the proper clearance of cutters, consequently they never burn.

These heads are fitted with or without the Self-Centering Sleeve, and made Expansion or Solid, to suit the customer's wishes.

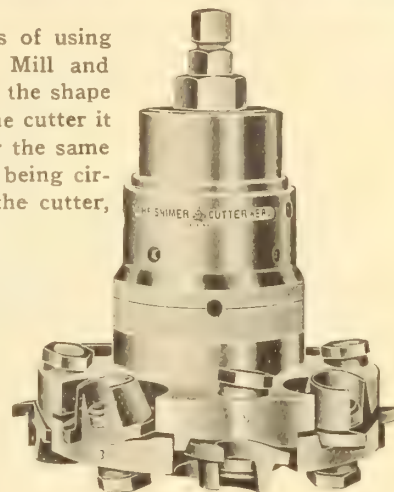


Fig. 268

Shimer Heads have been in use for sixty years, and their reliability and reputation have spoken for them in the past. Let us know your wants and we will guarantee their reliability at the present.

SHIMER CUTTER HEAD CO. OF CANADA, LIMITED

Successors to Samuel J. Shimer & Sons, Inc.

GALT, ONTARIO



"BEAVER BRAND" SAWS

We Manufacture :—

Band Saws and Scroll Saws

Inserted Tooth Circular Saws—Hoe Style

Solid Tooth Circular Saws of all descriptions

Grooving and Dado Saws

Gang, Mill and Drag Saws

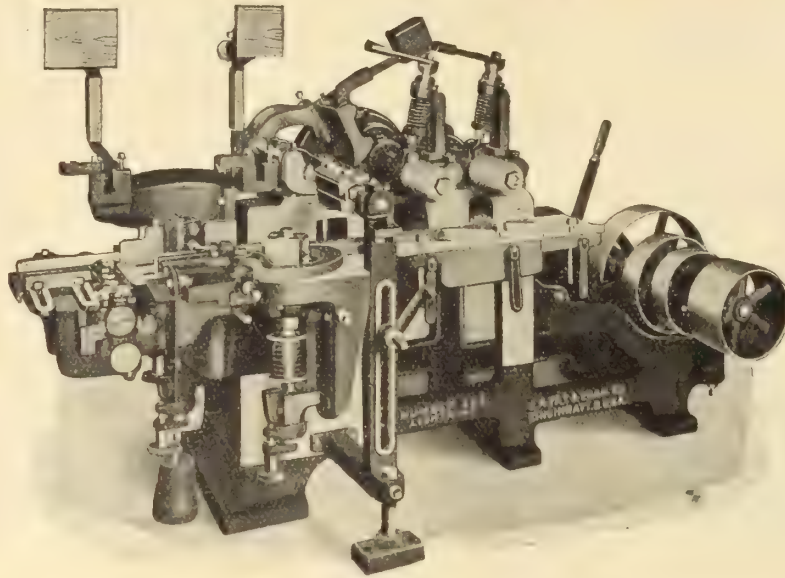
Only best quality steel, made by the crucible process, used in the manufacture of "**Beaver Brand Saws**"

All workmanship of the highest standard, and long experience assures our customers that our saws will give perfect satisfaction under all conditions.

Radcliff Saw Manufacturing Company, Limited

Cable Address :
"RADSAW, TORONTO"

1550 Dundas Street St. West, TORONTO



ON HAND FOR IMMEDIATE SHIPMENT

FAY-EGAN
"LIGHTNING"

6" and 7" Four Side Moulders

THE GET-AT-ABLE, TIME-SAVING AND
MONEY-MAKING LINE

—throw back the chip breaker, swing down out feed platen, and you have all four heads easily "get-at-able."

—make your new set-up quickly and know that it is going to be right.

—save lots of time and thereby increase your output.

—save waste due to mismanufactured stock.

—and don't forget, in addition to this "wide open" construction, you get all the following Fay-Egan Moulder features:

—heavy, one-piece frame—self-contained countershaft.

—spring pressure system—instant and positive in action—pressure graduated automatically according to thickness of stock—big improvement over weights.

—cut gear drive—gears mesh perfectly—silent in operation—saves power—no more crunching, grinding and frequent breaking cast gears.

—in-built quality—the most important feature of moulder construction, found in Fay-Egan Moulders, as the result of experience, care in design, workmanship and materials, and unlimited factory facilities.

TODAY—RIGHT NOW—

is the time to write for Bulletin E-9. Act quickly and you won't have to wait on delivery.

J. A. FAY & EGAN CO.

153-173 W. Front Street

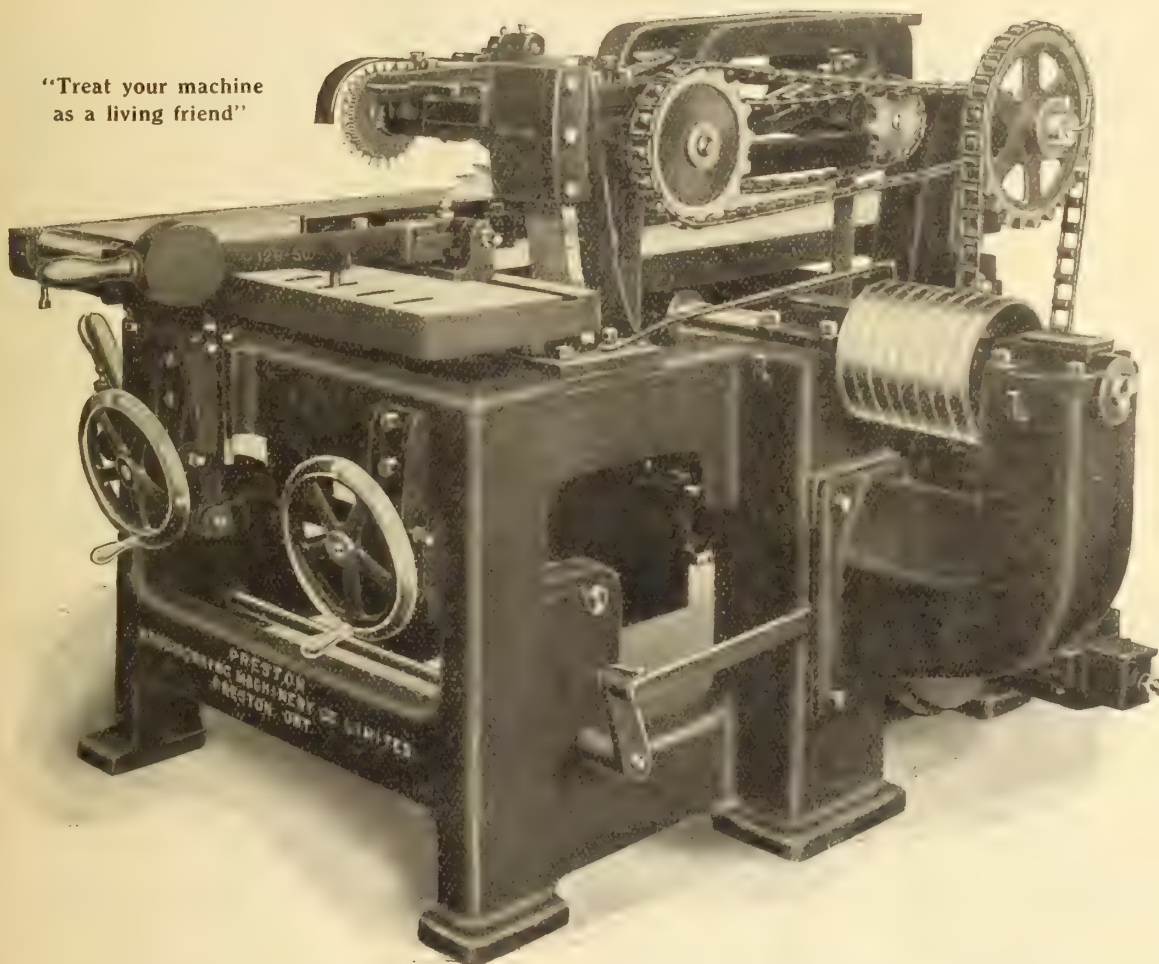
CINCINNATI, OHIO

Get Ready for the Big Problem of Reconstruction

Look over your equipment and consider whether your efficiency might not be increased by the purchase of a

Preston No. 129 Power Feed Rip Saw with Variable Feed

"Treat your machine
as a living friend"



"Confidence is the mainspring of established trade. It is built up by selling customers the things they want and being sure they get what they think they're getting."

Predominant features :—The great saving in labor and the large increase in production possible.

The feed is variable from 0 to 240 ft. per minute and reversible if desired. The frame is one solid casting. Every bearing is self-oiling. Both table and upper works raised and lowered by hand wheels.

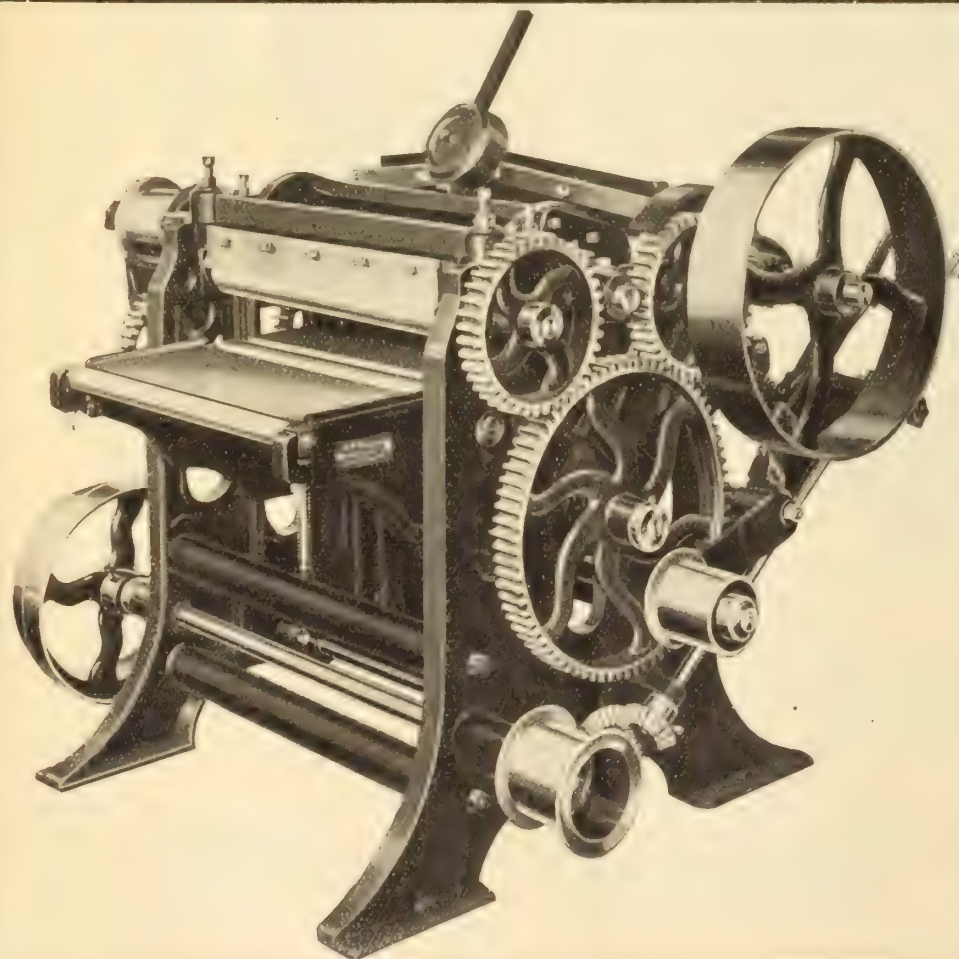
Send for Circular

The PRESTON WOODWORKING MACHINERY CO.
PRESTON, ONTARIO, CANADA

LIMITED

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The "Eclipse" SURFACE PLANNER

This machine is capable of producing the highest grade of planing and is especially suitable when very thin smooth work is required.

Over 2000 in use

A splendid testimony to the satisfactory service which you get when you buy an "ECLIPSE." Write for illustrated circular.

**The A. R. Williams
Machinery Co. Ltd.**
TORONTO - CANADA

FURNITURE CARVINGS

We have
issued
a complete

**NEW
CATALOG OF
FURNITURE
CARVINGS.**

*Will send on
request.*



Our Carvings
are being used
by most of the
High-Class
Furniture
Manufacturers.

Exclusive orna-
ments—accord-
ing to customers'
design — our
specialty.

DECORATORS SUPPLY CO., Archer Ave. and Lime St., Chicago, Ill.

*It is much to the credit of the better class of furniture manufacturers that they
are now lavishing their worthiest designing on*

RED GUM

("AMERICA'S FINEST CABINET WOOD")

RED GUM Furniture Makers have MADE A BIG HIT WITH THE WISER DEALERS, just as furniture dealers have pleased their most discriminating customers in putting on the market a wide range of beautifully designed and conscientiously manufactured pieces of RED GUM furniture. RED GUM is no longer identified only as a low price product. Its growing favor with the very best and most critical trade completely justifies the foresight of the industry. RED GUM FURNITURE is now THE FASHION. Are YOU taking full advantage of this fact?

Neither are up-to-date furniture manufacturers overlooking for a minute the wonderful value and applicability of SAP GUM to a hundred and one of their manufacturing requirements. When properly manufactured (as it is by the members of the undersigned Association) SAP GUM is thoroughly reliable, just as RED GUM is.

*Let us send you the RED GUM literature and let us direct you to a
group of buildings trimmed with RED GUM in your neighborhood.*

Gum Lumber Manufacturers Association

1314 Bank of Commerce Bldg.

Memphis, Tennessee

KANE

VEGETABLE VENEER

GLUE

Quality—None Better

We guarantee that the process used in the manufacture of Kane Vegetable Veneer Glue, and also the dissolving and usage of same by the consumer, do not infringe any patents, and particularly the patents recently construed by the Court of Appeals of the Seventh Circuit, or the Decree of the U.S. District Court at Chicago, signed August 5, 1918.

Manufactured and sold exclusively by

KANE MANUFACTURING COMPANY

28 E. Jackson Blvd., CHICAGO

Use FAULTLESS Casters

A WORD FROM
YOU PUTS ALL
OUR CASTER
EXPERIENCE
AT YOUR SER-
VICE AND
BRINGS YOU
A COPY OF
FAULTLESS
CATALOG "G"



Casters that roll easily across the floor—and smoothly. No chatter—no unsteadiness.

Simple construction—no complicated parts to get out of order, nothing to retard easy movement. Strong—plenty of metal in required places to resist strains.

Silent—neat appearing—a real necessity to YOUR furniture, these FAULTLESS CASTERS.

Made with lignum-vitæ, steel, leather, fibre and felt wheels, in all finishes.

Faultless Caster Company
EVANSVILLE, INDIANA

"What Others Say"

"The grades shipped have always been as ordered."

Mixing grades is a thing we never do. What we sell it for, it IS.

"We are pleased to say we expect to continue business relations as long as we are in the market."

Our biggest asset is the customers who feel that way toward us.

"We have always found you absolutely fair in all our dealings."

"Putting one over" on a customer is not our idea of good business.

"Our dealings through these many years have been very satisfactory and our business relations pleasant."

Our idea of good business is that it must be mutually pleasant and profitable.

"All of our dealings with your company for some eight or nine years have been among the best."

Making long-time friends is a habit with us.

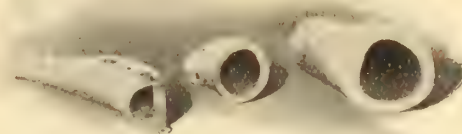
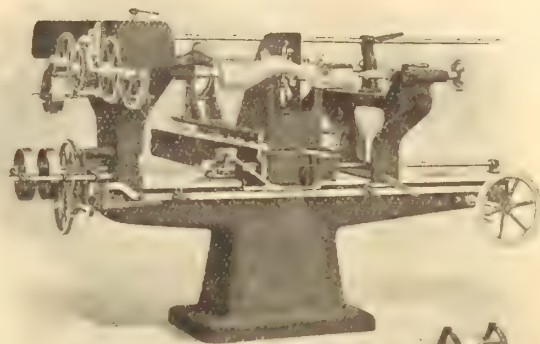
"Our dealings with your company have been thoroughly satisfactory in every particular."

You, too, will find thorough satisfaction in dealing with us. The proof is in the trial—try us now!

N.B.—The statements quoted above are extracts from bona fide letters written to us by our customers—letters which may be seen at our office at any time. Names of the writers will be furnished on request.

"Twelve million feet in pile of Oak, Gum, Ash, Cottonwood Cypress and Sycamore."

**Aberdeen Lumber Co.
Pittsburgh, Pa.**



DEFIANCE ARTIFICIAL LIMB MACHINERY

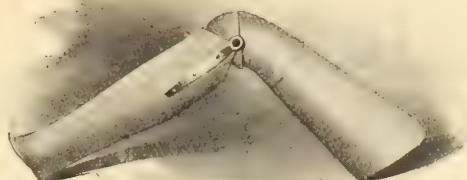
Why pursue obsolete and costly hand labor methods of shaping artificial limbs when a single Defiance machine, with one operator, will accomplish more and better work than eight or ten highly skilled workmen? With Defiance special equipment, the cost of shaping the outside and routing the inside of the sectional parts of artificial limbs is cut to a minimum. The use of these automatic machines by leading artificial limb makers, stands as an endorsement of their success. For information on high productive equipment for turning irregular shapes of all kinds, write to

THE DEFIANCE MACHINE WORKS

DEFIANCE, OHIO, U.S.A.

New York

London



Mr. Furniture Man:

Is WALNUT getting scarce ?

We say emphatically, No !

You can secure WALNUT for all your requirements for next several years.

Do not hesitate to adopt WALNUT for your Leading Line.

We can furnish your requirements in :

VENEERS

DIMENSION STOCK

LUMBER

Walnut exclusively

PICKREL WALNUT CO.

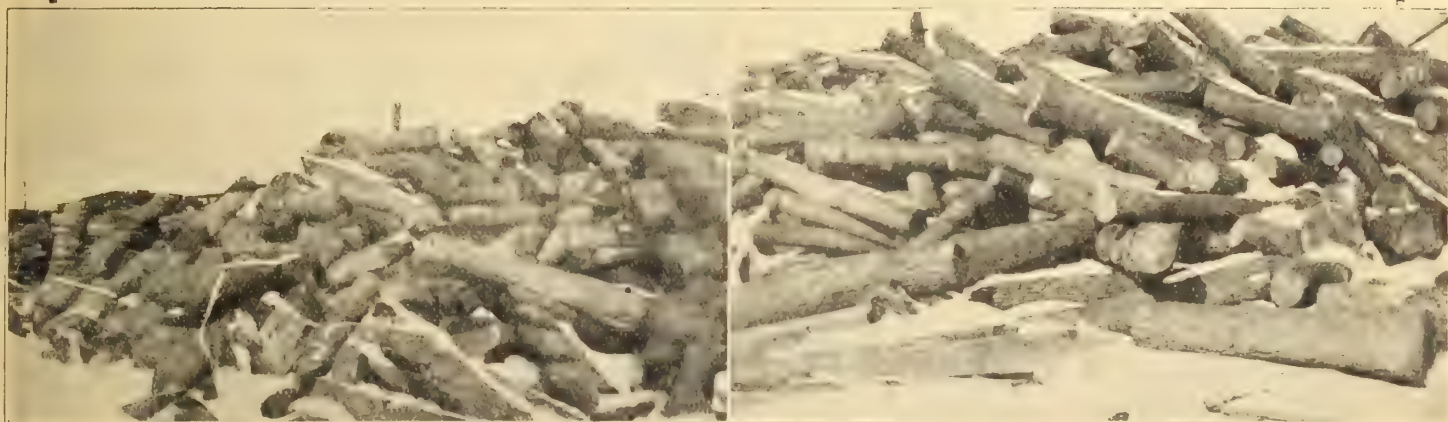
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ST. LOUIS

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MISSOURI

WALNUT LUMBER



VENEER

Prompt delivery

Long-Knight Lumber Co.
Indianapolis, Ind.

HARDWOODS

When You Want Them.

We can fill your needs for

Plain and Quartered Red and White Oak, Sap and Red Gum, Tupelo, Ash, Elm, Maple, Sycamore, Cottonwood and Cypress.

High grade woods of extra good quality is what we have to offer Mr. Furniture Manufacturer. May we place you on our list as one of our many satisfied customers?

We can ship promptly.

Cornelius Lumber Company
ST. LOUIS, Mo.

"Gum of Quality"

Yazoo River Red Gum

as produced by

**Thomas & Proetz Lumber
Company**

No. 3400 Hall St. St. Louis, Mo.

is carefully manufactured; soft
in texture; dark, rich in color;
and admirably suited for furni-
ture and interior trim.

Mills—Belzoni, Miss.; Catchings, Miss.
Naples, La.

If you are not buying from us, write today.

"The Kiln Drying of Lumber"

A Practical and Theoretical Treatise

By HARRY DONALD TIEMANN, M.E., M.F.

In charge, Section of Timber Physics and Kiln Drying Experiments of the U. S. Forest Service. Special Lecturer in Wood Technology and Forestry, University of Wisconsin. Forest Products Laboratory, Madison, Wisconsin.

About 280 pages.

The value of a technical knowledge of *kiln drying* is self evident. This book, as does no other upon the market, gives the reader the most recent and most clearly expressed information. The text and illustrations guide the way to the most efficient methods of work.

Price \$4.00

Woodworker Publishing Co., Limited

345 Adelaide Street West, Toronto

GEO. C. BROWN & COMPANY

Band Mill, Proctor, Ark.

Main Office, Memphis, Tenn.

St. Francis Basin Hardwoods Tennessee Aromatic Red Cedar

("We are enclosing check for the last car of Kraetzer Cured Gum, and will say that it was very nice stock, showing apparent care in its preparation and in manufacture, as well as being a high grade of No. 1 Com.")

Selection from a letter written us by a satisfied user of our stock. Many other letters reproduced in our booklet "WHAT OTHERS SAY"—yours for the asking—may we send it?

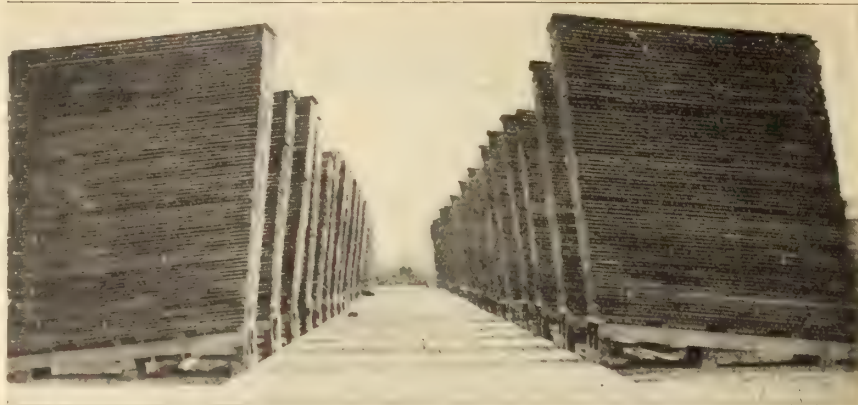
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SAP GUM (Kraetzer cured)		Feet	QUARTERED WHITE OAK		Feet
4/4"	Panel	14,000	4/4"	1st and 2nd, 8 in. and wider	9,000
4/4"	Box Boards, 13-17 in.	75,000	6/4"	1st and 2nd	4,000
4/4"	Box Boards, 9-12 in.	50,000			
4/4"	Box Boards, 7-12 in.	125,000	QUARTERED RED OAK		Feet
4/4"	1st and 2nd, 13-17 in.	100,000	3/4"	No. 1 Com. and Sels.	2,050
4/4"	1st and 2nd, 6-12 in.	250,000	4/4"	1st and 2nd	20,000
4/4"	No. 1 Common	250,000	4/4"	No. 1 Com. and Sels.	32,000
4/4"	No. 2 and 3 Common	200,000	4/4"	No. 2 Common	6,000
5/4"	1st and 2nd	13,000			
5/4"	No. 1 Common	35,000	PLAIN WHITE OAK		Feet
5/4"	No. 2 and 3 Common	30,000	5/4"	No. 1 Com. and Sels.	120,000
6/4"	1st and 2nd	30,000	6/4"	1st and 2nd	12,000
6/4"	No. 1 Common	200,000	6/4"	No. 1 Com. and Sels.	90,000
6/4"	No. 2 and 3 Common	500,000	6/4"	No. 2 Common	50,000
8/4"	No. 1 Common	3,500	8/4"	No. 1 Com. and Sels.	7,000
8/4"	No. 2 and 3 Common	30,000	10/4"	Common and Better	8,000
SELECTED RED GUM—PLAIN		Feet	PLAIN RED OAK		Feet
4/4"	1st and 2nd	250,000	4/4"	1st and 2nd	10,000
4/4"	No. 1 Common	500,000	4/4"	No. 1 Com. and Sels.	50,000
5/4"	1st and 2nd	25,000	4/4"	No. 2 Common	40,000
5/4"	No. 1 Common	45,000	5/4"	No. 1 Com. and Sels.	5,000
6/4"	1st and 2nd	60,000	5/4"	No. 2 Common	7,000
6/4"	No. 1 Common	150,000	6/4"	No. 1 Com. and Sels.	40,000
8/4"	No. 1 Common	40,000	6/4"	No. 2 Common	35,000
SELECTED RED GUM—QTRD.		Feet	MIXED OAK		Feet
4/4"	1st and 2nd	150,000	4/4"	No. 3 Common	200,000
4/4"	No. 1 Common	250,000	6/4"	No. 3 Common	100,000
5/4"	1st and 2nd	15,000			
5/4"	No. 1 Common	25,000	SOFT ELM		Feet
6/4"	1st and 2nd	22,000	4/4"	Log-run	200,000
6/4"	No. 1 Common	23,000	4/4"	No. 3 Common	30,000
8/4"	No. 1 Common	50,000	5/4"	Log-run	25,000
10/4"	No. 1 Common and Better	32,000	6/4"	Log-run	100,000
12/4"	No. 1 Common and Better	35,000	6/4"	No. 3 Common	90,000
SELECTED RED GUM—Plain, Figured Wood		Feet	8/4"	Log-run	200,000
4/4"	1st and 2nd	58,000	8/4"	No. 3 Common	7,000
5/4"	1st and 2nd	3,000	10/4"	Log-run	75,000
5/4"	No. 1 Common	4,000	12/4"	Log-run	60,000
6/4"	No. 1 Common	8,000			
SELECTED RED GUM—Qtrd., Figured Wood		Feet	SOFT MAPLE		Feet
4/4"	1st and 2nd	33,000	4/4"	Log-run	50,000
5/4"	1st and 2nd	10,000	4/4"	No. 3 Common	12,000
6/4"	1st and 2nd	2,500	6/4"	Log-run	50,000
8/4"	1st and 2nd	12,000	6/4"	No. 3 Common	21,000
10/4"	1st and 2nd	7,000	8/4"	Log-run	60,000
			10/4"	Log-run	25,000
			16/4"	Log-run	37,000

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4/4" No. 1 Com. & FAS..	60,000	6/4" FAS	45,000	5/4" FAS	145,000
4/4" No. 2 Com.	180,000	6/4" No. 1 Com.	120,000	5/4" No. 1 Com.	185,000
4/4" No. 3 Com.	90,000	8/4" No. 1 Com. & FAS..	20,000	6/4" FAS	10,000
8/4" No. 1 Com. & FAS..	250,000	10/4" No. 1 Com. & FAS..	20,000	6/4" No. 1 Com.	10,000
10/4" No. 1 Com. & FAS..	10,000	4/4" No. 1 Com. & FAS			
12/4" No. 1 Com. & FAS..	26,000	Sound Wormy	20,000	MAPLE	
PLAIN WHITE OAK		PLAIN RED GUM		5/4" Log Run	10,000
4/4" FAS	25,000	4/4" FAS	10,000	8/4" Log Run	10,000
4/4" No. 1 Com.	75,000	4/4" No. 1 Com.	270,000	12/4" Log Run	35,000
4/4" No. 2 Com.	90,000	5/4" FAS	10,000	ELM	
5/4" No. 1 Com.	25,000	5/4" No. 1 Com.	50,000	4/4" Log Run	70,000
6/4" No. 1 Com.	90,000	6/4" No. 1 Com.	10,000	4/4" No. 3 Com.	30,000
8/4" FAS	10,000	QUARTERED RED GUM		12/4" No. 2 Com. & Btr.	50,000
8/4" No. 1 Com.	20,000	4/4" FAS	10,000	HONEY LOCUST	
12/4" No. 1 Com. & FAS..	70,000	4/4" No. 1 Com.	40,000	4/4" No. 2 Com. & Btr.	10,000
12/4" Bridge Plank	65,000	SAP GUM		PECAN	
PLAIN RED OAK		4/4" FAS	25,000	4/4" Log Run	10,000
4/4" FAS	10,000	4/4" No. 1 Com.	70,000	CYPRESS	
4/4" No. 1 Com.	75,000	4/4" No. 2 Com.	260,000	4/4" Log Run	70,000
4/4" No. 2 Com.	100,000	4/4" No. 3 Com.	70,000	5/4" Log Run	10,000
4/4" No. 3 Com. R&W ..	400,000	4/4" Box Boards, 8-12" ..	35,000	6/4" Log Run	20,000
5/4" FAS	20,000	4/4" Box Boards, 13-18" ..	10,000	8/4" Log Run	20,000
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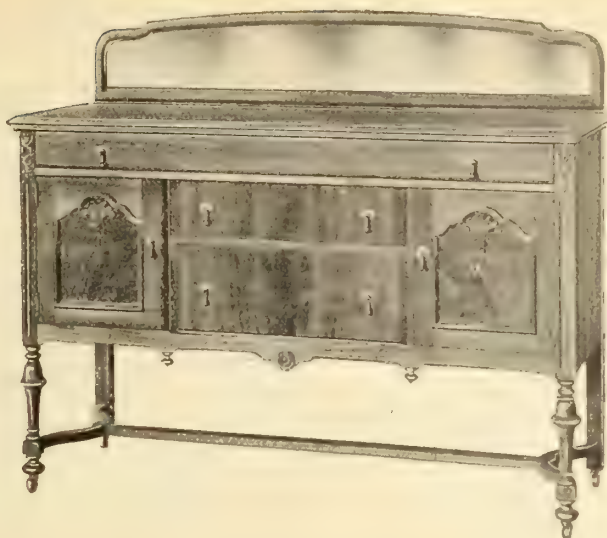
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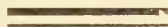
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Toronto, January, 1919

No. 1

Getting After the Export Trade in all Wood Products

The woodworking factories and furniture plants of Canada are preparing to take every advantage of the splendid offerings that are being presented in connection with the export business and the reconstruction of the devastated countries of Europe. It is known on all sides that there is a great need for portable houses, interior and exterior trim, wooden articles of all kinds and for chair and other furniture stock in knock-down condition. The quickest and most effective way to secure anything is in going after it aggressively and unitedly, and this is what the Canadian Timber Products Association is doing in regard to the portable house business. The details of the live campaign carried out by this alert organization and the fact that it already has a wide-awake representative in Great Britain to secure orders are referred to in another article in this issue.

The Furniture Manufacturers Association is also vigilant and expects to secure through the Canadian Mission in London a substantial order for various lines of furniture, the same as the Canadian lumber industry has already landed the sale of a billion feet of wood products of various dimensions and grades and constitutes one quarter of the total annual output of the sawmills of all Canada. Toward the financing of all orders the Canadian Government is extending every credit and if the necessary ocean tonnage is provided, the future of the woodworking industry is reassuring. The Canadian Purchasing Commission and the various commercial agents are doing all in their power to see that Canada receives an adequate proportion of the huge orders that are being placed. Chief United Kingdom Trade Commissioner Harrison Watson, in presenting a review of the commercial situation in the United Kingdom, says that the inter-

ests of Canada will get full consideration, is assured by the presence in Great Britain of the Canadian Government Trade Commission, the chief object of whose visit is to insure that the Dominion is the recipient of a proper share of reconstruction orders in the allied countries. He also points out the lines which suggest themselves as finding ready markets in Great Britain, are manufacturers of wood of all kinds, such as handles, dowels, box boards, turnery, etc. Large quantities of these are used in Great Britain and for the supply she is almost wholly dependent upon other countries. In regard to future provision it is pointed out that Canada should be able to secure a large share provided the industry is organized in the same adequate and efficient manner as in rival countries. Mr. Watson also emphasizes the fact that there is a good opening for chair and other furniture stock in a knock-down condition.

The point raised by these references is that the openings exist, but the various industries which are capable of supplying the lines already indicated, must get down to work at once and not expect the Canadian Purchasing Commission to do it all. The Canadian Timber Products Association has already taken action. It is understood that the Furniture Manufacturers' Association are pursuing a similar course and will send a competent and energetic representative to the Old Country. The woodworking industry in other lines should also act without delay. The opportunities are numerous and such splendid avenues for the expansion of business will not present themselves in another generation.

There is a shortage in nearly every line and more particularly in respect to furniture. Trade journals across the water call attention to the fact that the requisitions for good, well designed, medium class furniture are persistent, and that flimsy and cheaply built outfits are commanding a figure that should buy the very best articles. The reason of this is a decided shortage of home furnishings of every description. It is declared that splendid results await the enterprising concerns who are foremost in the field. The furniture dealers and woodworking industries of Canada should be able to capture a just proportion of the trade that is offered. There is a disposition just now in the mother country, all things being equal, to favor the industries of the overseas Dominions on account of the heroic and significant part played by their sons in the recent struggle for liberty, democracy and civilization.

Canada holds a place and a name in regard to world affairs which she never enjoyed before and, to use a trite expression, the psychological moment has arrived. The Canadian woodworking industries in all branches should be equal to the occasion, but they must remember that a passive attitude, or trusting to the other fellow to do something, will not achieve results.

Handling Stock from Swing Saw to the Planer

Delays Are Caused by Inefficiency—System is the Remedy—Foresight as a Contributor—A Practical Suggestion on Standardization

By F. J. H.

I suppose a really perfect system in the manufacture of furniture is not obtainable, but in nearly every factory that you might happen to visit, and broach the subject to one of the foremen, you would likely find him very reticent in regard to his methods of working his departments, and yet, in some way he would convey often before, there is more than one reason for system was the very best. And so it is, the most of us think that our way of doing things is the best there is, but if we examine our methods carefully, we are almost sure to find slack places that need tightening, arrangements and plans that can be improved, and to that end, some of the remarks here set down have reference to.

Stock Held Up Between Saw and Planes.

The writer has in mind the movement of stock, chiefly from the swing saw to the planer and sticker, and the switching off or holding up certain parts, while the job is being moved on, and the pushing ahead of certain other parts for convenience as well as for advantage.

It seems to be very easy for the different parts of a job to get separated after leaving the rip saws, and very often before, there is more than one reason for this. Quite often it occurs this way, especially when the stock bill contains a small number of parts. The rip saw man will likely put two or more jobs on one truck, in that case the joints or glued up parts are mixed in with the parts that are solid, the truck leaves the rip saw in this way, with two or more jobs piled on it. The next operation being at the buzz-planer or facing off machine, it is there that the separation of parts begins, the operator of the facer, taking from the truck the parts and pieces which it is his duty to handle, then placing the rest on another truck to be passed on to the next man, or as it often happens, when the lot is a small one, it is laid aside, in some corner, until some one comes along looking for it. Sometimes it cannot be found, the tag having been in some way pulled out and lost, or another small lot has been piled on top of it, (it is the small lots that gets out of the way and causes the most trouble) so then, the tag being lost, and no other mark on the stock to show what jobs it belongs to, much time is lost by someone hunting around for the parts that are missing, and also trying to place the lot that has no mark to identify it. It often ends by having the stray parts cut out again; not only a loss of time, but waste of material, as it is seldom that a part that has got astray, can be worked into another job without considerable waste.

Stock Should Be Sorted At Saw.

This difficulty can be overcome, to a great extent, if at the rip saws all glued-up parts are put on a separate truck, from the solid stock, and not mix up joints and solid pieces on the same load. The wide or glued parts of a job should always be cut out first and passed on to the facing and jointing machines, so that by the time the rest of the job is ripped out, and faced, the joints are glued, and dry, and the whole job is ready, complete for the planer or sticker.

Now for the better locating of parts that have been

switched off, and small lots where the tag is lost. The rip saw man, when completing a number, should with a lumber pencil, mark the last piece he rips with the catalog number, and the index number on the bill, and then draw the pencil across both ends of the piece. Then, if the stock tag should accidentally get lost, a man could tell, by glancing at the stock, which piece has the numbers that identifies the lot, and with the bill his task would then be easy.

Another chance of holding the jobs from being moved on to the planer, is where one or more swing saws cuts off the inch stock, and another saw handles the heavy or thick stock, (there are good reasons why some particular saw should handle all stock above 1 in. in thickness). I have noticed on several occasions, where the thick stock on a job has been held by the swing saw operator from two to three weeks after the main part has been cut out and partly machined, then it has to be switched off until the lagging lot catches up.

The object in holding back the tags of the thick stock has been to have two or more jobs of that particular kind of stock to cut at the same time or to follow right after one another. This method is certainly of some advantage to the man who is cutting the stuff out, but it will always be, unless in some very exceptional cases, a serious disadvantage in getting the work moved on in complete and regular order.

Cut Thick Stock in Advance

The better way for the man who cuts out the thick stock is, to cut in advance, if he finds where he is cutting out some particular lot, he has considerable more stock than can be used on that job, such as shorter lengths, ends, and rippings, by consulting the foreman of his department, something can generally be found that will be on bill for cutting in a short time, where all his short lengths and overstock can be worked in. When cut and placed on a truck in a snug and compact way there won't be much space occupied in holding it until a favorable time comes for moving it forward.

It will often be of much advantage to have a truck load or two of this kind of stock handy, to give to a rip saw hand, where he may be a little slack. It seems to me a great deal better, to be a week or so ahead of time, than to keep the main part of a bill waiting a week for the heavy or thick stock. I have always maintained that the thick stock on a job should be cut out first, and when I had the whole job to cut complete, (in days that are past where the plant was small) I always made it a point to do so. It seemed to be an advantage in this way: Take legs of cases or chairs, for instance, where, after being squared up, blocks had to be glued on to form a swell, for turning or bandsawing. When this was done the stock could be kept well ahead, until the blocks were glued on, and the legs brought up to the machine for the next operation, and so worked along without holding back the rest of the job in any way.

Another part of a job that should be kept well ahead is the core stock for veneering. This can be

done without much trouble as core stock is easily handled, and can be pushed along without disorganizing the regular order of work, then the veneered stock can be thoroughly dried out before sizing and shaping, and there will be no holding up of anything or waiting for veneered parts.

Standardizing the Width of Drawer Fronts

Why could not drawer fronts be standardized as to widths? Especially so in factories, that manufacture medium and cheap grades of furniture. The large drawer of a sideboard might correspond in width with the medium drawer of a dresser or chiffonier, and the small drawer of a sideboard be of the same width as the top drawers of dressers, chiffoniers, etc. Have only about four standard widths of drawer fronts. The benefit derived from this plan would be that the drawer sides could be got out in fairly large quantities, instead of having to be cut with each job as it goes through. Four standard widths and two standard lengths of sides would cover the situation, and could be got out in lots of a thousand or so, dressed to thickness and cut to size, and put in a compact pile near the dovetail machine. A thousand drawer sides won't take up much space when properly piled, and then when a batch of drawer fronts is brought up for dove-tailing the sides can easily be got by the operator.

The cost would be reduced by this method, and another benefit would be, these sides could be gotten out between times, when orders on bill for cutting were low, or no other work was pressing. There would be a gain in having this work to fall back on, when other work was a little slack. I know it is a good thing when cutting out a job to have parts such as drawer sides, to work in with certain kinds of stock, and scrap, in order to keep cleaned up. The stock referred to could be cut off to one of the standard lengths and piled on trucks until it accumulates to such proportions that it could be profitably ripped and sent along in the regular manner.

Belt Guards for Wood-working Machines

In every factory where there are belt-driven machines, belt guards of some kind are practically a necessity. The problem of guarding a machine belt is usually so different in every case, due to the direction of the drive and the position of machine, that the guard must

be designed and made right at the factory. Guards that are made and used in wood-working factories, however, are frequently framed up with some common scrap lumber, and either boarded up solid or filled in with slats or some kind of wire netting.

Some of these wooden guards are put up in a neat and workmanlike manner and answer the purpose well enough, but many of them are nothing more than makeshifts and altogether inefficient. Wooden guards as a general thing soon become covered with dust, and those parts near a bearing or loose pulley become oil-soaked and are therefore a source of danger from fire. They are unsightly and fragile—easily broken, and soon sagging out of plumb.

A very efficient belt-guard construction, and one that has been adopted by a number of wood-working factories, consists of a well-braced framework of angle iron and strap iron, with heavy wire netting as a filler. The iron framing is riveted or bolted together and the wire netting is riveted fast to the inner edges of the frame. The photographs herewith show belt guards of this construction which are in use in the factory of the Specialty Display Case Co., Kendallville, Ind.

Guards of this type can be fastened into place more satisfactorily and easily than wooden guards, because it is a simple matter indeed to bend an extended bar or leg of the iron frame to the angle and position desired, and bolt or rivet it to a convenient post, to the floor or to the machine itself. This idea is shown clearly in Fig. 1, which shows how an H. B. Smith endless-bed sander is guarded. These guards are neat and substantial, and they give the operator ample protection from the belts, pulleys and other moving parts of the machine.

Fig. 2 shows a single-drum sander guarded in a way that permits of shifting the belt on the tight and loose pulleys, and also permits of access to these pulleys through a gate or door near the lower end of the guard. This latter is a very necessary and important feature. Guards of this kind can be put up by any practical mill-wright, and when once in place they are there to stay as long as the machine is in service, if desired.—The Woodworker, Indianapolis.

A by-law may be submitted to the electors of Bobcaygeon to grant the Toy Company of that town a loan of ten thousand dollars.

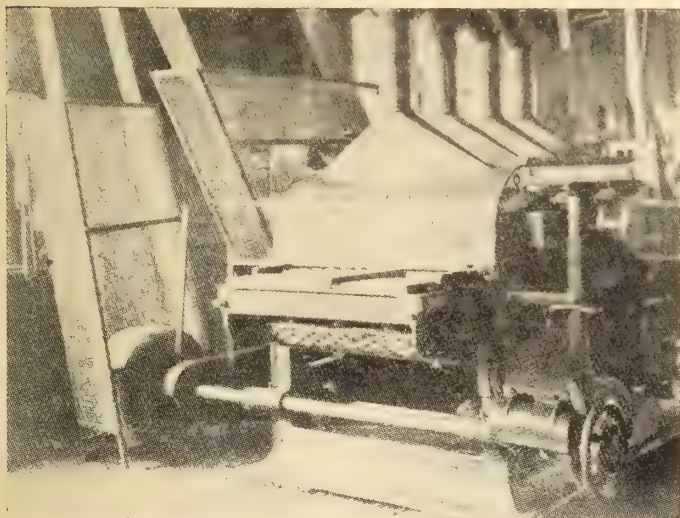


Fig. 1—Showing guards on an endless-bed triple-drum sander

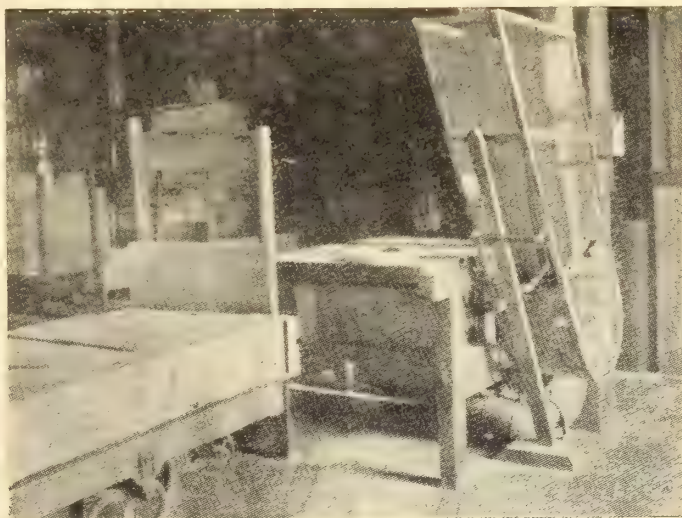
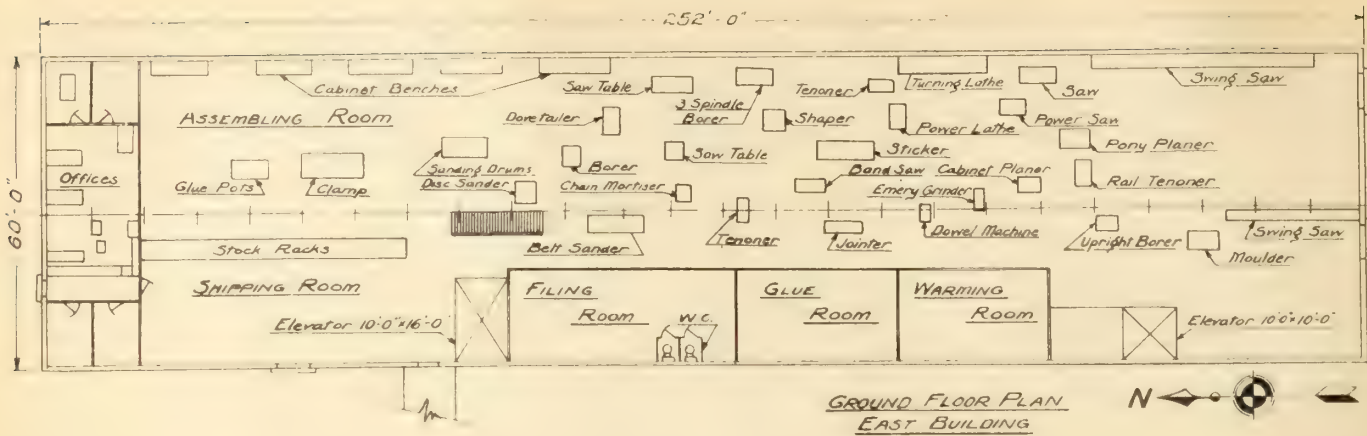


Fig. 2—Method of guarding a single drum sander



Furniture Making in British Columbia

**Vancouver Factory Has Built Up a Large Industry, Using B. C. Woods
Principally—Plans for Better Business**

An industry which, the promoters claim, is unique in all Canada in completeness and variety of its output is that of the Restmore Manufacturing Company, Limited, of Vancouver. The justice of this claim will be the more readily recognized when it is learned that in addition to a considerable output of iron and wooden beds, turned out with a complete equipment of springs, mattresses and pillows (all made on the premises), both dining room and living room furniture are also manufactured. The company's representatives therefore, when taking orders from merchants in outlying districts and in other provinces, can have contracts signed for entire carloads of goods to be supplied direct from its own factory, thus eliminating the extra expense of pooling cars with other companies in order to complete straight car shipments.

The Growth of a Big Concern

The factory is well situated on one of the most advantageous sites in the industrial section of Vancouver, and occupies a floor space of over 80,000 square feet, with an additional reserve building space to the front of the present buildings of 210 x 75 feet. The main building is a four-storey structure which contains, besides the business offices, the lumber cutting and planing departments, the cabinet and upholstery departments, and the finishing, shipping and sample rooms. Adjacent to the main building is a smaller one of three storeys which is devoted to the manufacturing of bedsteads, springs, etc. Between the two buildings are located the railway shipping facilities. This industry had its start thirteen years ago, when, as a one-man concern, it was opened up in a small shop on Main street by F. H. Barber, the present managing director of the company. So quickly did the business develop that new quarters soon became necessary, and in 1907, the plant was moved to a larger building on Dufferin street. In the fateful year of 1914 the present quarters in Grandview were taken over, and some anxious periods were experienced soon afterwards owing to the depression occasioned by the outbreak of war. The hard times have been successfully weathered, however, and to-day there are 130 men and women employees.

The plant is a modern one and includes some of the most up-to-date machinery known to the trade.

On the main floor of the bed factory the bending and adjusting of the rods of steel for bed posts is carried on. Here, too, the crude steel wire is converted into springs, tempered and dipped. Three grades of coil springs are made and seven grades of woven wire springs. The next floor is devoted to the painting and enamelling of bedsteads. When assembled they are simply dipped in a large bath of enamel and then hung up in the bake ovens.

One of the most interesting floors in the factory is that given over to the manufacture of mattresses and pillows. In one section of it the crude masses of cotton fibre go through the initial process of cleaning. The fibre is dumped into the ventilating box and is pulled apart and "dusted" by air force, which eventually ejects the cotton cleaned and ready for its formation into felt sheets. About 50 pounds of fibre are thus treated at a time. Issuing from the shaft of the ventilating machine the cotton then enters the huge garnet felting machines. These machines not only spread and press the cotton into firm layers or plys, but also roll it and cut it according to the length of mattress filling required.

Six sheets of cotton felt are used for the best grades of mattresses. A small quantity of excelsior is inserted between the middle sheets of the cheaper grades, in which less felt is used. This mattress filling, in order to be pressed and introduced into the tick, is placed upon the automatic filling machine, to which the tick is attached. The machine with a double motion, first presses down the sheets of felt, and then drives them into the tick. The open end of the tick is then sewed up and the mattress passed into the stitching and tufting room, where it is finished ready for shipping.

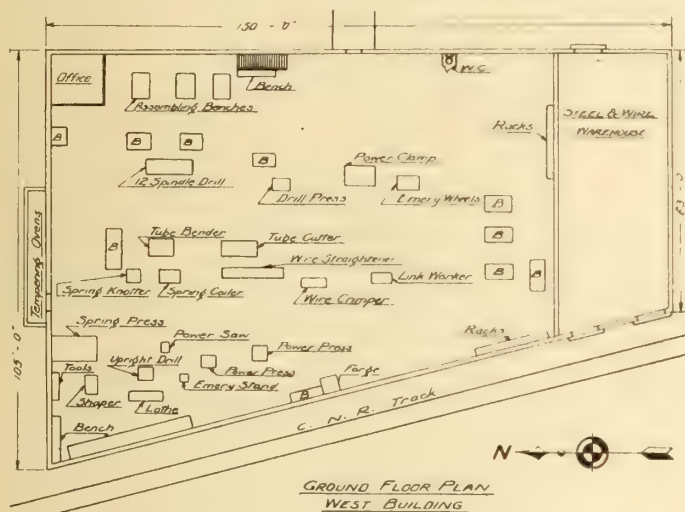
In the pillow making section of the floor the facilities are such that 150 pairs of pillows can be turned out per day.

The making of excelsior is a small business in itself. One sees it first in its natural state as cottonwood logs. These logs are fitted into the teeth of the excelsior machines, located in the lumber yard, and shaved into several grades of excelsior. The material used in the factory is then forced up through ventilators to the different departments, and the balance is

baled and sold for packing purposes in the local markets.

An interesting device used in the bed factory, and which has been patented by the firm, is their new steel corner bed lock. This entirely satisfactory lock is made of pressed steel, in such a way the greater the weight on the bed the firmer is it held together. The lock not only assures a perfectly rigid bed by drawing the bed rail flush against the post, but it also eliminates breakage and reduces the weight of the entire bed frame from 10 per cent. to 35 per cent., thereby effecting a saving in freight charges. These locks are equally effective for wooden beds, and being made of pressed, instead of cast, steel exact fitting is always assured.

Besides the ordinary steel and wooden beds, the company manufactures in large numbers convertible spring bed-couches, davenport, and several grades of Chesterfield couches. A large trade is done with the lumber camps throughout the province in single and



double-deck bunks, which are made of either steel or wood. A good trade is also done with the steamship companies in bunks and other cabin equipment.

Extensive Users of B. C. Woods

In the four-storey furniture section of the factory the ground floor, with the exception of the space occupied by the office, is devoted to the cutting, planing and sandpapering of lumber, which previously has been dried in the open air for six months and then further seasoned in the dry kiln for 30 days. About 48 carloads of lumber a year is the average consumption, which represents roughly 1,200,000 feet. Of this 80 per cent. is B.C. wood, and consists mostly of fir, maple and spruce, the remaining 20 per cent. being oak and walnut from the Southern States. A quantity of three-ply cottonwood veneer, used chiefly for drawer bottoms and cabinet interiors, is shipped in from the plant of Laminated Materials, Ltd., Sapperton. Having been cut and prepared on the first floor the lumber then passes on to the cabinet room on the second floor, where the more detailed cutting is done by skilled workmen, and the articles of furniture constructed. These include complete dining room suites, bedroom suites, and den and library furniture, such as tables, rockers, Morris chairs, etc. The articles then pass on the finishing department, where all the staining and varnishing is done. In the packing room all mirrors, locks and castors are adjusted and the

goods made ready for shipping. Leather and tapestry upholstering—an increasingly successfully end of the business—is carried out on the floor above.

Besides an extensive and growing local and B. C. business, shipments, usually of the medium class of furniture are made to all points in Alberta and many in Saskatchewan. For the convenience of the Vancouver Island trade a four-storey warehouse and factory equipped with trackage facilities is maintained at Victoria.

The future plans of the company provide for the manufacture of Circassian walnut furniture and other lines coming into pronounced favor with the buying public.

The Best Way to Make Joint

By Joiner

Nearly every workman who can lay any claim to the title of mechanic has his own pet theories as to how to joint up stock. There is one type of worker who insists on gluing and heating both pieces. There is another who insists that a joint does not need tooth-ing as the tooth is likely to tear out the fibres at the edge of the stock thereby causing a "black joint."

These theories have some foundation in fact and the writer has tried almost every way imaginable in the gluing line and believes that the following methods are the most enduring and workmanlike.

Do nothing that will mar the sharp edges of the stock, otherwise, all the labor and care expended will be in vain, for if the edges are dubbed at all the joint will never present a finished appearance. Tothing is essential, but instead of using the toother in the ordinary way, reverse it. Used this way the toother will not tear out the fibres and the scoring will be accomplished just as satisfactory.

Some factories insist that the joint made on the saw is good enough to glue on. This may be for joints that are covered, but joints that are in prominent places, such as the top of a buffet or table, should be "shot" with a jointing plane, a method which makes a perfect joint and cannot be improved.

In gluing, glue the cold surface and be sure that the alternate piece is hot enough to melt the glue, but no more, and after the material is cramped up, the glue should squeeze out in little bubbles, a sign that it is a perfect gluing. An experienced gluer can always tell by this, whether or not he has his materials at the proper temperature.

Never release the pressure under one hour, at least. This is one of the most important points to consider and failing to observe this rule has been the cause of much spoiled work. A man will take stock out of the cramps in twenty minutes, or a half an hour, with apparently no bad results. This is bound to cause future trouble and many bad joints that show up, only in the finishing room, can be traced directly to this cause.

The responsibility of making good joints does not end when the material is released from pressure. It is the duty of the workman to see that the material, which has been taken from the cramps, is not stacked near a window or any place where it is likely to absorb moisture. Carelessness in this particular is often the cause of trouble even though the gluing is perfect.

Two coats of thin filler 12 hours apart are better than one heavy coat.

Leakages in Lumber and Other Materials

Why All These Accounts Should be Checked Up Regularly and How it Can be Done—The Importance of the Work

By W. Cawkell

It is an undoubted fact that there is a great difference in the cost sheets of furniture manufacturers, as to what is the worth of lumber, veneers and other hardware. In many articles of the same size where obviously the quantity and quality of lumber, veneer and hardware used are the same, there will be a difference in the various cost sheets amounting to 25 per cent., 50 per cent. and even as high as 30 per cent., and after making allowances for variations in the actual cost, it is obvious that there are serious leakages in these accounts. So much so, that the writer has come to the conclusion that manufacturers are incurring greater losses through this cause, namely, material leakages, than in any other way.

While a manufacturer will watch his cash accounts, and insist on his books being audited, and the monthly trial balances taken off to prove that the ledger balance is correct by the other books, that is to say he has controlling accounts in his private ledger which show what the amounts of his different ledgers should be, in the majority of cases he is supinely ignorant as to whether his lumber and other material accounts prove out. In other words he has no controlling accounts of the materials used in his business and yet it is more important, and there is usually more money invested in this way than there is in his cash accounts.

Cost System Vital Necessity

The importance of having a proper cost system and one that will prove itself, is becoming recognized in the woodworking plants throughout this continent, and manufacturers are now evincing a keen desire for information on all matters relating to costing. Many articles have appeared with overwhelming evidence, and proof why it is necessary for manufacturers to know their costs if they are to conduct their businesses in an intelligent and scientific manner, but I do not think that the question of knowing whether all the lumber and materials actually taken from stock are charged up correctly on cost sheets has been as fully dwelt upon as it should have been. It should be borne in mind that the lumber and material costs are part of the basis on which percentages are added to arrive at the selling price, and if the base is wrong the difference is considerably increased by the time the selling price is arrived at. This is one of the reasons why it is so extremely important that all basic costs should be accurately determined.

Proof Should be Shown

Manufacturers should know by actual proof, as shown by controlling accounts, as to whether their materials on hand prove out correctly. For instance, the different items on their cost sheets should agree when added up with the material charges, as shown in their trading accounts at the end of the year. How far these accounts should be divided up will depend upon the size of the factory and the different kinds of materials used, but there should be at least controlling accounts opened up for: 1. Lumber; 2. Veneers; 3. Glue; 4. Hardware; and 5. Finishing materials.

When stock is taken the inventory should be so

divided as to show the stock on hand of each of these classified divisions, or as many classified divisions as the factory manager decides is requisite for the requirements of his particular factory.

Where quantities of oak are used and quantities of hardwoods these should be classified separately and if a factory uses a quantity of gum wood or any wood where a wastage is recognized as being larger than in other woods, this should also be listed separately. Then the Purchase Journal should be divided in the same manner and all materials purchased entered up under their respective headings. The inward freight and duty on these materials would, of course, also be allocated in the same manner.

The first entry in the ledger controlling accounts would be the amount of the different materials on hand. Then the total monthly footings of the purchase journal would be posted as a debit against its proper account.

Cost sheets in numerical order would be made out for every batch of goods put through the factory. The money value of the materials on these would be entered into a sales journal divided exactly in the same manner as the purchase journal and the total footings at the end of each month would be posted to the credit of material accounts and when stock is taken of any class of material on hand it should exactly equal in money value, the balance as shown in that controlling account.

Watch the Wastage Carefully

In order to commence to prove the different material accounts it is not necessary to wait until the end of six months or twelve months, but you can commence by proving any one of them or all of them in one month's time, and if the stock on hand does not agree with the controlling account, this matter should be rigorously investigated and the cause of the shortage ascertained and any account which does not prove should be checked up every month until it does prove out properly.

In a great many cases it would be found that the amount of wastage allowed for lumber is totally insufficient. In charging up lumber the current cost price should be put down as accurately as possible, and there should not be additions made to this price to cover wastage. All the additions for wastage should be made where it occurs; namely, in the quantity, and it should be borne in mind that 50 per cent. waste on the finished product is equal to 33 1/3 per cent. waste in the lumber yard.

While on the subject of lumber wastage, I might say, it will be found that this is a big study which will repay the cost of investigation many times over. The wastage on some local lumber may be as high as 70 per cent. or even higher, and one of the points to consider is whether manufacturers are buying the cheapest lumber for their requirements. The lower grades very often prove unnecessarily expensive owing to the high percentage of waste.

Your controlling accounts will give you very valuable information, so much so that the money that

could be saved in this way would of itself alone pay for all charges in connection with a reasonable cost system for any factory. Large amounts of money have been saved by factories who have thoroughly investigated the lumber end of their business, and the installing of controlling accounts for lumber and materials is the most important where a variety of goods are made.

Individual tests where a certain amount of lumber is measured out and made into a certain number of articles, answers a useful purpose and is a guide, but I would be very sorry indeed to have to base costs, or be satisfied that my lumber account was right because of such a test or tests, because when tests are made the lumber may be selected and the very fact of it being checked will cause care to be exercised which may be absent on other occasions. What a manufacturer requires to know is not merely what amount of lumber it **takes** to make a certain quantity of articles, but what lumber has actually been used during the year for making these articles, which is a very different matter. For instance, you may check the work of a man on a machine during an hour by a stop clock, but would you be prepared to say that the work this man puts out equals that amount of work per hour, plus the amount of hours he has worked during the year.

A Competent Cost Accountant

The Furniture Manufacturers Association have engaged a competent cost accountant, whose business it will be to instruct manufacturers how to install an adequate system suitable to their different plants and it is safe to say that this will prove to be a great money-saving proposition.

Some manufacturers are confident that they are charging the correct amount in their cost sheets for the materials used, but the greater number recognize that they do not know, and those who think they do know will no doubt be better satisfied if they have controlling accounts which will show whether they are right or wrong.

I could very greatly enlarge on this subject by giving many instances of serious losses that have come under my own notice, and in talking with various cost men in the United States, who have checked up "material accounts," I find that there are enormous wastages and losses incurred by firms who have no material controlling accounts to guide them.

It is a well known fact that a man has to pay for book-keeping, whether he keeps books or not, with this difference. The man who does keep books knows what his book-keeping is costing him, whereas the other man does not.

Will We Have a "Victory" Period Style?

Representative Furniture Manufacturers Express Their Views—Great War Deserving of a Tribute—Public Would Buy

Looking back through history we find that there is a distinctive style of furniture, associated with or attached to a number of great historical periods. Thus we have the "Queen Anne" style, "Louis XIV" and "Jacobean" styles, the "Renaissance" period furniture and many others.

The world has just passed through the greatest and most momentous period in its existence. We have fought a magnificent fight and have come out victorious. The struggle will go down through history as the most stupendous and appalling of all combats. Not only was the war fought on an undreamed-of scale, but the stakes were the greatest that were ever decided on the field, civilization itself hanging in the balance. Can any one imagine a period that offers a greater scope for distinctive style of furniture? Can you think of a period style that would make a stronger appeal to the hearts and imaginations of our people; that would appeal not only to our present generation, but to all succeeding ones. The name itself should be one to conjure with "Victory," "Allied Period" or "Great War Period."

A style of this kind would prove attractive not only to those who have fought in the great struggle, or to those who have paid the price and suffered, given father, brother or loved one, but to all others who have lived during this period of stress and strain. To this end the design would have to be plain and substantial, almost sombre in suggestion, but it could also run to graceful lines. To enable it to go into every home it would be necessary that it could be adapted to the medium priced lines as well as the more expensive. There is a wonderful field here for some designer to make a reputation that will class him with the great masters of the older periods.

The "Canadian Woodworker" suggested this sub-

ject to several representative furniture manufacturers and dealers and their observations are both timely and instructive. Perhaps you, Mr. Manufacturer, have not given this question any consideration, take a few minutes and think it over then sit down and write the editor giving him your suggestions.

One prominent manufacturer expressed the view that a style, embodying simplicity with durability, with a name reminiscent of the war, would find a ready market. He was of the opinion, that in all probability the demand would not last, but would, like many other new designs, pass out of public favor.

From Kitchener comes the suggestion that this is a matter that should be left largely to the designers, who are the creators of the styles that are adopted by the furniture producers from time to time. Another opinion was that there was likely to be a new period style or a suitable modification of some of our present period furniture; that the public would buy freely of this class of furniture and the exact design could be worked out by following the general trend of the styles which would be in greatest demand.

A Western Ontario man expresses the belief that such a style of furniture, properly designed, would take the public's fancy and would be in good demand. There would be an exceptional response from those who had suffered the loss of relative or friend. He went on to say that furniture was a staple commodity that should last a life time and as such it would be difficult to conceive of a more fitting memento than furniture designed to represent this great period.

Views Not Unanimous.

All manufacturers do not take this view, however, for from central Ontario comes a statement that, at present the furniture industry of Canada is burdened

with an overabundance of lines, styles and sub-styles. Few, if any, of the furniture makers would be willing to go to the expense of working out a new style, and pushing it by organization, well directed publicity, and active support.

Continuing, he said that bringing out a new design involved more work and worry than the general public realized and in addition it meant a considerable outlay. There was the time of the designer and draughtsman, then the patterns had to be made and in all probability special fittings and knives. In fact, he was quite willing to "pass the buck" and allow some one else to have the honour of bringing out this new line.

A local maker of antique furniture when questioned said that he had very little faith in the public taking kindly to new styles as they had not been sufficiently educated, in the matter of period furniture to appreciate a representative line of distinctive design. Still furniture reminiscent of this great period would have a sentimental appeal irrespective of the distinctiveness of its design.

A leading retail furniture dealer stated that he had not given the matter much thought, but was of the opinion that it would be better to have the question thoroughly discussed not only in the "Canadian Woodworker," but in the daily press. By doing this the attitude of the public would be learned and after all the people are the final judges, for they do the buying.

The whole question seems to be a case where the manufacturer is forced to back his own judgment. That there would be a market for a certain amount of "Great War Period" furniture goes without saying; how great, time alone will tell. Price would be one of the controlling factors.

Some aggressive manufacturers will probably have a try at it. They will in all likelihood find the progressive dealer behind them and willing to push the line to the utmost. With enthusiastic handling and proper advertising, co-operation and service, the results should be gratifying and, in the opinion of not a few manufacturers would surpass the expectations of the most sanguine.

Live Firms Go After Export Business

A. G. Rose of Ottawa, vice chairman of the Canadian Timber Products Association, left yesterday for England in the interests of that organization, which is composed of some 16 representative firms. The object is to promote the sale abroad of Canadian wood products and more particularly to secure orders for knock-down or portable houses which will be of standard build.

At a recent meeting of the Canadian Timber Products Association, held in Ottawa, the following officers were elected:

William Rutherford, W. Rutherford & Sons, Montreal, chairman; Mr. A. G. Rose, James Davidson's Sons, Ottawa, vice chairman; Mr. Fred Potvin, the Georgian Bay Shook Mills, Midland, Ont., secretary; directors, Messrs. F. Kent, Seaman-Kent Co., Meaford, Ont., J. S. Schultz, Brantford, F. C. Thompson and W. C. Edwards, Ottawa.

Mr. Rose, who is thoroughly familiar with the woodworking and lumber trade, has been identified with Jas. Davidson's Sons, Ottawa, for the past 35 years, commencing to work in the factory when very

young. He now holds the position of secretary-treasurer of the firm.

Mr. Rose was born in Nairn, Scotland, and has never worked for any other concern except that of Jas. Davidson's Sons, he being a first cousin of the late Jas. Davidson. Mr. Rose will get in touch with the Canadian Purchasing Commission in London, of which Lloyd Harris is chairman, and will also visit France and possibly, Belgium.

The plan of operation is to secure orders in blocks of one thousand or if possible, ten thousand. It is believed the French Government will deal with Canada direct, and that the British authorities will look after the Belgium end of the business.

An aggregate order for ten thousand houses is being aimed at, and if more can be secured they will be taken. The number of feet in each house is to be 4,500. There are two types of houses figured on: Type "A," having two rooms, being put in at \$375,



A. G. Rose, Ottawa

and the other a three-room house, of which no particular type was listed, is to sell at \$415. Blueprints from the French Government were followed.

When the orders are received the work will be apportioned to the various plants with which the members of the Canadian Timber Products are associated. The distribution will be on the basis of the capacity of the plant. It was estimated that with the combined output of the factories concerned that two hundred houses could be turned out each day.

Glued-Up Stock Should Be Cross-Marked

In a factory recently I noticed a quantity of glued-up stock that varied much in width, some much too narrow and some much too wide. I began looking for the cause, and concluded that it all came from the fact that the stock was not cross-marked at the stock rip saw. The jointerman had gotten some of it mixed, or perhaps a few pieces had accidentally been knocked off the truck, and having no marks to go by they did not get them back together right.

At another time I saw a whole load of joined stock in transit to the glue room, tipped over on the elevator, and I will leave it to the reader to imagine what a difficult job it was to get it together, without any cross-marks to go by.—Observer.

Value of Adequate Illumination

Factory and mill owners are concerned in the matter of securing the largest output for a given manufacturing expense. An improved machine tool capable of increasing the product for given labor costs is most attractive, provided its first cost is within returnable limits out of the larger profits. Improved small tools, better methods of handling material, adequate crane service, fire protection, good shop floors, accurate and efficient time-keeping methods, and similar items, vitally concern the shop manager; money is expended to realize excellence in these features because they afford increased economies and protection, thus resulting in a higher efficiency of the plant.

Energy Consumption a Minor Item.

Many arguments leading to the sale of gas and electric lamps for use in factory and mill buildings are based on reducing the lamp operation cost of substituting a new for an older system. Arguments of this kind are of value, however, only when such a reduction in operation cost can be effected without sacrifice in the adequacy of the illumination. It would be a poor policy, in the extreme, to argue a saving in energy consumption by the substitution of one type of lamp for another on a basis of equal candlepower in both old and new systems.

Arguments of a convincing nature, which insure to the factory or mill manager an increased output through improved illumination service, are of importance and even greater at times than reductions in the cost of illumination for the same quantities of light. In view of the fact that resulting advantages of superior illumination on increased output are apt greatly to exceed economies in operation cost as regards the lighting system, it is a distinct advantage to direct and hold the attention on the former rather than on the latter. This statement will be more apparent when interpreted into definite items as follows:

Advantages of Good Light.

While the necessity of good natural and artificial light is so evident that a list of its effects may seem commonplace, these same effects are of such great importance in their relation to factory and mill management, that they are well worth careful attention. The effects of good light, both natural and artificial, and of bright and cheeful interior surroundings, include the following items:

1. Reduction of accidents.
2. Greater accuracy in workmanship.
3. Increased production for the same labor cost.
4. Less eye strain.
5. Promote better working and living conditions.
6. Greater contentment of the workmen.
7. More order and neatness in the plant.
8. Supervision of the men made easier.

In this list it will be noted that items 4, 5, 6, 7 and 8 all have a bearing on accident prevention.

While the major consideration in the eyes of the factory or mill owner is undoubtedly and quite naturally the money value of good light in the larger return of both quantity and quality of work which may result from the installation of a superior as compared with an inferior lighting system, it should be noted that it is very difficult to interpret into dollars and cents the value of good light made possible by such

returns. This difficulty is due to the necessity of keeping all conditions in a factory or mill section absolutely constant while varying the amount of illumination from poor to good conditions, in an effort to determine the output and its dependency on the light facilities. As accurate data becomes available, giving the increases in production for certain specific improvements in artificial lighting, it will doubtless prove helpful to a proper interpretation of adequate light and its worth to any plant.

The eight foregoing points are emphasized as forming the most important features in the problem of



An economical lighting installation

good lighting. Although difficult to interpret into money values, and somewhat intangible, they are indisputable arguments in favor of the best available illumination from the standpoint of the factory or mill owner.

A Practical Example

Continuing from the manufacturer's point of view, it may be said that certain assumptions as to energy cost, cleaning, interest and depreciation, show that the annual operation and maintenance cost for the illumination of a typical shop bay of 640 sq. ft. area, may be taken at \$50.00. If five workmen are employed in such a bay at an average wage of say 25 cents per hour, the gross wages of the men in such a bay, plus the cost of superintendence and indirect shop expense, may equal from \$5,000 to \$7,000 per annum. In a case of this kind, therefore, the lighting will cost from 7-10 to 1 per cent. of the wages, or the equivalent of less than 4 to 6 minutes per day. We may roughly say that a poor lighting system will cost at least one-half of this amount (sometimes even more through the use of inefficient lamps and a poor arrangement of lamps), or the equivalent of say 2 to 3 minutes per day. Nearly all factories and mills have at least some artificial light, hence, in general, if good light enables a man to do better or more work to the extent of from 2 to 3 minutes per day, the installation of good lighting will easily pay for the difference between good and bad light, through the time saved for the workmen.

Up-To-Date Method of Sanding Stock

The belt sander is one of the most valuable machines in the cabinet shop of any furniture factory. It has long passed the experimental stage and the work turned out by this machine is actually superior to the hand-sanded work of the old-time cabinet makers. The following remarks by L. J. Cleary in "Factory" should be read with care by those interested in more efficiency in the furniture factories.

Many plants, not devoted strictly to woodworking, turn out parts made of wood which require sandpapering as a preliminary to finishing. Often in such plants, where the woodworking is a comparatively unimportant function, the sanding is done by hand, when it might be more effectively done with a belt sander such as is commonly in use by cabinetmakers. Belt sanding is twice or three times as fast as hand sanding and produces smoother and more nearly uniform finishes. When this is fully understood fewer managers will permit their employees to go on sanding and polishing the stock in the old way.

When a machine is once installed it seems better to break in some active young man as operator than to try to change the habits of a man who has been doing this same work by hand. The newly trained operator should be imbued with sufficient enthusiasm and given definite instruction so as not to begin with a handicap. When stock is brought to and from the machine on trucks the operator can devote his entire time to the machine work.

The wide variety of machines on the market makes it possible to purchase one adapted to any class of work. The economical operation depends upon the instruction and attention to details regarding belts, blocks and location of the equipment. Care should be taken to select the machine best suited to the work, whether panels, moldings, turned stock, corner blocks, or special shapes.

Perhaps the best location for the sanding machine is next to the machine department, so that the sanding as a last operation of the machine room may be performed without unnecessary trucking of the stock. The wrong location of these machines is particularly noticeable in many factories because belt sanders are often a recent addition to the equipment and are usually placed wherever space permits.

Dust collectors require careful attention when attached because the fine dust from the belts is not only harmful to the operator's lungs, but affects the quality of the work to a certain extent. If the collector is not attached so that it follows the travel of the belt and draws the dust from the work at the pulley driving the belt, it will allow dust to fly in the air and back over the work.

How to Make Sanding Belts Last Longer

Stock may be cut much faster across or diagonally of the grain than lengthwise. Therefore it is usually best on coarse sanding to take a first cut across the grain and then turn the stock to take the finishing cut with the grain, thus taking out any of the cross scratches. Where possible it is economical to use the new, sharp belts for the coarse work, and, when worn down, to lay them aside for later use on fine finishes on close-grained soft woods.

It is well to break the new belt in with a slight pressure. This prevents any tendency to crack and

tear later on. The cheap paper belt, broken in carefully, thus often stands up as long as a more expensive one with a heavy backing. The belt also cuts better and lasts longer if it is turned end for end after being broken in and used about an hour. To obtain an especially fine finish, a file may be held against the belt while in operation in order to take off the first roughness before the belt is used on the stock. This eliminates the chance of scratches from uneven abrasive or rough belt edges.

Picking Best Belt for the Work

When a belt is gummed up with dirt, it can be stretched out on the floor and cleaned with a broom and soapy water. Or it may be cleaned while in the machine with an ordinary scrubbing brush dipped in kerosene. The body of the belt will become soft if too much kerosene is used. In this manner belts which have become gummed with pitch from yellow pine for instance, may be used again, as the abrasive will have been filled up with the pitch long before it is worn out.

Belts will last in proportion to the care given them. When the machine is not in use, the belt ought to be loosened or taken off, if the machine is not equipped with an idler, and hung over sticks to prevent their getting cracked.

A speed of 3,000 lineal feet a minute has been found satisfactory for long belts, in permitting the use of a coarser belt than ordinarily used. On a panel belt sander the speed may be between 2,000 and 5,000 feet, although this may be varied to suit the size of the pulleys so that they will not become heated. The finer the abrasive used, the slower the speed. Since the finer the finish, the finer the abrasive required, the speed ought to be regulated somewhat according to the quality of work to be done.

Shape of stock and grain of wood ought to be considered in selecting belts. For ordinary panel work, the coarse abrasive and paper belt will usually be satisfactory. For moldings, the belt requires sufficient backing, so that it can be worked into the shape of stock and produce uniform results. There is not enough body to the light backing, sometimes furnished, to give good results on certain shapes.

How to Get the Best Work

The farther apart the standards are set, the greater is the flexibility given the belt. While flat stock may be worked with the pulleys at any distance apart, the moldings and shaped pieces necessitate that there be enough distance between the pulleys to allow the belt being molded to the shape of the stock to be sanded. When there is an idler on the machine, the belt can be loosened sufficiently to aid still further in getting good results on old-shaped pieces. Another advantage of long belts is that the abrasive has a chance to cool off before it gets around and so does not heat so rapidly.

The felt covering on molds or over pulleys should be hard. Soft felt is likely to wear quickly in spots, and make an uneven surface against which the operator has to work. Better work may be done if the roll against which the work is held is stationary. The roll can be shaped to suit the stock and be padded or coat-

ed with a non-friction preparation made up of graphite mixed with shellac or linseed oil. If the work is sanded against a revolving roll there is likely to be too much vibration and result in lack of uniform surfaces and slower operating time.

Getting Greater Output from the Men

It has been found that the best kind of pad is one made up with a good felt about three-eighths of an inch thick and covered with canvas. A mixture of graphite and shellac is used to fill up the pores of the canvas and when dry, rubbed down with sandpaper so as to give a smooth, even surface. When the edges are trimmed off this pad will do good work and last almost indefinitely.

When a new belt is to be prepared for the machine, the strip should be cleaned at each end with a hot iron and scraper or by dipping in hot water. The ends can then be dried out in a clamp set over the steam coils, or with a hot iron and a thin coat of glue applied where the lap is to be made. By using a piece of zinc on either side, coated with oil to prevent their getting stuck, and tightening in clamps and leaving until ready to use, there will be little danger of the belt ever breaking at the joint.

The establishment of a satisfactory piece or premium method of payment at belt sanders is not a matter of timing a single group of pieces. So many variables influence the output that it is often necessary to make a thorough study of the operations preceding the sanding.

Scratches on the stock or glue spattered over it will affect the output. The deftness of different operators must be timed since hand action is a greater factor than belt speed. The quality of the finish must be set before-hand and checked occasionally by an impartial inspector.

With the foregoing considerations in mind it may be well to make a careful study of the sanding work in your plant with a view to cutting costs by displacing hand work with machines.

Economical Use of Glue

The glue-room equipment should be the best, and ample provision made for providing the workmen with the proper mixtures in appropriate quantities. Glue should never be allowed to stand in the cooking vessels over night, as deterioration is sure to follow, but should be run into shallow pans and cooled.

Benchmen should be supplied with only the quantity needed for the day's work, and any that is left over should be gathered up each evening and the pots cleaned. Where the amount of work will justify it, an experienced gluemaster should be employed and held responsible for results. He will earn his wages many times over.

It is impossible to avoid a certain amount of dripping, but if these drippings are carefully gathered every day, they will find a ready use or a market in making some product that does not demand the highest grade adhesive. If your glue room is not being worked to your satisfaction, give it a little intelligent attention, and you can accomplish the elimination of waste that runs into a good sum in the course of a year.

U. S. Government Will Sell Ships

The Emergency Fleet Corporation has decided to open American ship yards for the building of wooden ships for private owners.

Some Practical Grips for Bits

This month we shall consider the varying methods of securing bits and augers in fixed or running heads. All the methods here depicted are in use, some naturally are more frequently used than others, but this must always be so—for two reasons, says Designer, in "Machine Woodworker."

One reason is because a certain method may be much in advance of all the others, and the other reason is that being of a sort of standard type a particular style is adopted as a matter of course without an enquiry as to possible defects or whether there is anything better. With the first of these two reasons I am all in agreement, with the second I have not much sympathy—

Now No. 1 of the illustrations is a type which all are familiar with, and a very good and useful type it is, too.

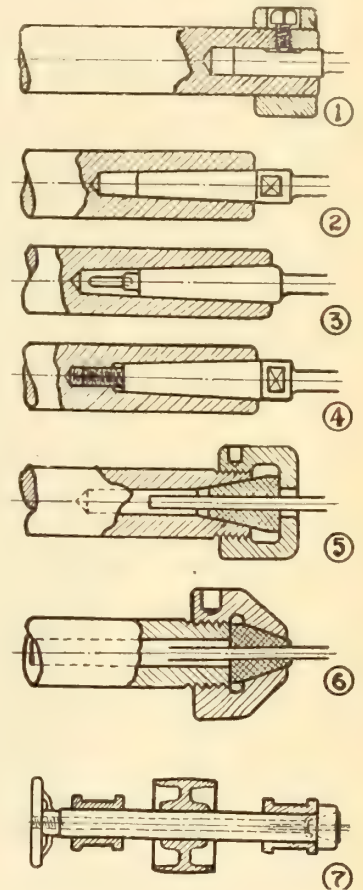
The greatest fault is the "burring" of the nose of the holding screw, and the "burring" of the shank of the bit, though generally there is a flat on the auger shank to accommodate the screw nose. Also, constant use, or excessive tightening, both tend to strip the thread of the holding screw.

The head of the screw should be shrouded; this can be done either as shown in the sketch or a recess made in a forged collar on the spindle, the solid collar, of course, being the better way, as it gives a larger tapped hole, but it is not always convenient to make the spindle with a solid collar, and it is more expensive.

Sketches Nos. 2 and 3 show a type more frequently met with in metal-working machines than in woodworking machines. The shank of the drill is taper and fits a corresponding taper in the nose of the spindle. In metal work this is all right, because the pressure on the drill at work always tends to press the shank into the spindle, but with an auger, as you know, everything depends upon the state of the screw point, for if the point is too keen it will draw the auger into the wood more quickly than the pressure behind can be maintained, and consequently induces the augers to slip.

The only difference between Nos. 2 and 3 is that one has flats on the extension of the shank for the purpose of putting on a spanner to loose the shank in the taper, while the other has a cotter hole through the spindle whereby the auger can be knocked out by the use of a cotter supplied for that purpose.

Thus No. 2 needs no overhanging spindle as does No. 3, because there is no cotter hole to get at, never-



theless No. 3 is more in use than No. 2. No. 4 is designed much on the same lines, but is adapted more especially to woodworking machinery, inasmuch as the limitations of 2 and 3 are overcome by the addition of a screw on the end of the shank. This screw, of course, is "handed" so as to tighten up when working, thereby ensuring that the auger or bit cannot slip, as it is always pulled by the screw "into" the taper, and yet no great effort is needed to withdraw the bit. The objection to most of the foregoing is the necessity of special shanks to the bits, and this is where Nos. 5 and 6 step in, being still better adapted to woodworking machinery (and indeed to metal-working machinery, too, in rather different style).

You will see that by pushing a cone grip, which is split in two, or three, into a coned hole to receive it, it is closed on the bit or auger which may be in the central hole.

The grip is a good one and quite sufficient for all ordinary purposes, no slip taking place.

As no special shank is required (a set of grips being kept for each size) the auger can be protruded the length only which is necessary to the special job in hand, the surplus going up into a central hole in the spindle made to receive it.

This is a point which is very advantageous, as the bit is all the steadier and less likely to break.

Fig. 7 shows a somewhat similar type, but intended for quick changing of the bit on the work, whichever is in use.

These, then, are different ways of gripping bits and augers, No. 6 probably being the best all-round job.

Glue, Its Use and Abuse

By Wm. Webb

The right way to build a good house, is to start right, and build a good foundation. The same rule applies to furniture, and the foundation of good furniture is glue. Without a good foundation the best piece of furniture is spoiled. So you can see how important it is to make sure that the glue used in any wood-working industry is of the best quality, of the proper consistency, and applied in the proper manner, to obtain the best results.

A Warm Glue Room is Essential

Some manufacturers will devote considerable time and energy to the finishing department, lend an attentive ear to the complaints of the foreman of the cabinet room, and sometimes even be persuaded to get some more up-to-date machines for the machine room, but the poor gluemans often has to take pot-luck. Any old place is good enough for him and his smelly business, some dark corner that cannot be used for anything else.

Well, let's get to work. The whistle has blown. The first job is that batch of spinnet desks. What kind of glue have we to put into our foundation? The boss has listened at last to the many and varied complaints of his foreman, ably seconded by the gluemans, and has provided a good, strong glue. So far, so good. What kind of a glue room are we expected to pass ten hours a day in? It is kind of draughty, but if we move fast enough, we might, by good luck, make a good job. It is hardly warm enough, but we will have to take a chance on that. What kind of a gluemans have we, to do the foundation work on these expensive desks? Here is a point I would like to draw your attention to. Some manufacturers seem to have

an idea, that all that is required in a gluemans, is a human being, who is able to use a brush, and sometimes use his muscle. The good glue they have provided, will make up for the lack of grey matter in the cranium of the gluemans. Those who think that way should ponder deeply, because money invested in a good glue room, and the wages paid to a fairly intelligent gluemans will pay a big dividend by eliminating a whole lot of trouble all through the factory: yes, and often beyond.

Is it Possible to be Too Careful?

We notice that the gluemans (who happens to be one of the intelligent kind) tests his glue by devious ways known only to himself. The material to be glued is in the warming box. He takes a top out, arranges it on his trestles, applies the glue as though he knew his business, and clamps it together. And he has a good job. Or he hasn't.

There are a dozen things that may happen to spoil that job. First, in what shape was his glue? I have argued glue with all kinds of men. One would say "that as long as the glue was liquid enough to spread it was good glue." It didn't matter to him how many times it had been cooked. Another that glue must be boiled from five minutes to two or three hours. They must have been reading a cook book, and thought that the process used in cooking porridge was intended to be used in cooking glue. And I would not have been the least surprised to have seen one be-whiskered old gentleman take a pinch of salts, and gravely add it to the glue. There is not a more truthful saying than "Boiled glue is spoiled glue." Don't, under any circumstances, allow the glue to boil. Get it hot, but don't boil it. Don't cook glue more than twice, as continued cooking takes the strength out of it. Glue needs to be soaked in cold water before cooking, but never soak more than you can use each day.

Keep the Material Warm.

When warming the material to be glued, don't get it too hot as the heat will take the moisture out of the glue, and failure results. Don't have the material cold, or the glue will be chilled, and the result is failure again. Don't allow a draught to strike the fresh glued material, or the glue is again chilled, and you cannot have a first-class job.

A glue joint properly made, and properly glued, is actually stronger than the wood itself. You can see by these few remarks that the gluemans's job is not as simple as some people think. There is plenty to learn in the glue room, and a good, intelligent gluemans, who takes a little pride and interest in his work, is "worth his weight in—glue."

Overcoming a Common Trouble

Another trouble that is found in some furniture plants is the tendency of the blocks, glued on the squares for "William and Mary" turnings, to fall off. Some men use a hand screw, and glue for or six blocks on at once. Others use the press. Both systems, in my opinion, are wrong. By putting the blocks on in the press, the operation takes too long, the glue sets before the pressure is put on. The same thing applies to the hand screw process, and a certain percentage will get knocked off in the turning lathe, something the wood turner dislikes exceedingly. The only sure way that I have found is to rub them on. Take a board, nail some small pieces on it to place the blocks in their proper position, then glue the block

only. Rub it on the square till it holds tightly, and in five minutes you can't knock it off with a hammer. When the narrow blocks are dry, the rough edges are smoothed off on the jointer, and the wide blocks are rubbed on in the same way. Care should be taken that the surface is perfectly smooth, because if air is able to penetrate between the block and the square, they are bound to part.

New Wood Testing Plant on the Coast

The new Wood Testing Laboratory of British Columbia is now in operation and much interest has been aroused in its work. For many years woodworkers and lumbermen of the Pacific Coast province have dreamed of such a convenience, but at last it has become a reality. The Laboratory is housed in a specially constructed building at the University of British Columbia, in which also the recently formed forestry

that this will not be continued. If it is decided, however, to discontinue the test of this wood the Laboratory will make a comprehensive study of Douglas fir in structural dimensions. The nature of the wood tests made at the Laboratory are very interesting and cover static bending, impact bending, compression parallel to grain, compression perpendicular to the grain, hardness, shearing parallel to grain, cleavage, tension perpendicular to grain, etc. In the accompanying illustration, showing the interior of the woodworking shop in connection with the B. C. Wood Testing Laboratory, the Olsen Universal Testing Machine is seen. About a year ago some small, clear specimens of Douglas fir were tested in the Laboratory at Montreal and the results were issued in bulletin form. The Vancouver Laboratory proposes to continue the work by testing Douglas fir in structural dimensions, as the fir is the most important tree growing in the forests of British Columbia.



Woodworking shop in connection with the B. C. Wood-Testing Laboratory

class for returned soldiers is held. L. L. Brown, who is in charge of the work, is a former member of the wood testing staff at McGill University, Montreal, and after the war broke out went overseas as a lieutenant in the tunnelling corps. He received his discharge after two years' service in July last. His assistants are W. J. Johnson, of the University of Toronto; J. A. Carson, of McGill University, Montreal; W. Templeton, late of R.N.A.S., and others. As it was felt desirable to test aeroplane spruce on the spot the laboratory was primarily established as a war measure, as the laboratory in McGill University has almost been depleted of help owing to the war, an arrangement was made to ship its entire equipment to the Coast; otherwise it would have taken many months to secure new machines, and it was felt that the activity of the eastern laboratory could better be held up temporarily. Mr. Brown has been testing Sitka spruce for aeroplane purposes, but now that the war is over, it is possible

Abuse of Circular Rip Saw

Of all the tools in a woodworking plant, the circular rip saw is probably the most neglected and abused. In the first place, it does not get oiled regularly. One day it very likely gets oiled twice or three times, and then not again for three days. Usually it gets oiled when the saw has to be changed, for then the oil cups happen to be in plain sight and convenient. The rip saw that is in use all day generally fares better than the others, for then the sawyer makes a point to oil up on starting in the morning, and at 1 o'clock. But the saw that is used for a general purpose machine a dozen times a day by as many different men is apt to be oiled by none of them. The mandrel that is oiled through holes in the table is the worst off of the lot, for the cups on the top of the boxes are always full of sawdust. The operator pours some oil through the hole on top of this, and it runs off on the floor.

Brazing and Guiding Small Band Saws—A Practical Article

The band-saw is an important machine, and any suggestions as to the best methods of brazing and operating it are eagerly read by all woodworkers, says A. M. in the *Machine Woodworker*.

The efficient brazing and guiding of small band saws are results which all operators should strive to attain. Perfection of workmanship cannot, however, be attained even in this particular work, for however well a job may be finished no one can assert that such could not be improved, though so long as a critic cannot improve the job he must admit that piece of work to be perfect so far as he is concerned. The training of men from their youth in matters relating to wood-working machinery is most essential, for probably the bulk of the trouble in connection with machines, and the production of inferior work, can be traced to the fact that the operators responsible were 25 to 30 years of age before they attempted to work a machine. Since the advent of the great war and woodworking has become an exempted trade it is deplorable to observe how the working of saws and machines has been taken up by men who lack the necessary knowledge and skill to manage these machines.

How to Braze a Saw

There are several methods of brazing in general practice, and one in common use is to taper each end to the extent of two teeth, observing caution that the teeth are properly matched as regards set; brass, borax, etc., is then inserted between the splice, and wrapped with wire to keep the joint firm and in proper position. Then tongs are heated to something more than red heat, and pressed upon the joint, thus melting the wire and joining the ends of the saw. After this the saw must be filed down on both sides at joint and finished with emery cloth. There are, in the writer's opinion, better methods than the above as regards stability and convenience, the chief being the use of silver solder instead of the substance just mentioned, as less heat melts this material, and it is more adhesive. Therefore, I consider it advisable to adopt it in preference to any other. The grips in which the saw is fixed for brazing should be absolutely straight, and some 20 in. to 2 ft. in length, with four screws to keep the saw in a perfectly parallel position. This arrangement can be fixed in an ordinary vice, and tongs sufficiently hot can be applied; when in all cases a sound and reliable job can be expected. Another brazing apparatus is a blowing machine where gas is used to heat the joints. In other cases, charcoal is used, which arrangement, when skillfully used, may be said to be the handiest, and to make the best and strongest joint.

Guiding a Hand Saw

Band saw guiding is another operation which should receive special attention. There are several types of guides. Side guiding may be successfully acquired by the application of either side or end wood, but the wood in any case should not project over the teeth, and the appliance wherein the wooden guides are fixed should be adjustable to suit the varied widths of saws. The most important point in connection with guides is the nature of the contrivance which receives

the back thrust. By the impetus of feeding the saw is pressed forward so that it is necessary to have some arrangement to resist the force created by the feeding of the timber towards the saw. Some operators are content to work away with a solid metal plate, the use of which generates friction and heats the back of the blade, causing expansion at that part, and rendering the saw more liable to snap or run out of true. In other cases a small pulley is fixed at the back of the guide to resist the back thrust, but commonly this arrangement is also fraught with disadvantages, the chief perhaps being that the saw wears a groove in the pulley, and the resisting force being confined to 1/16 in. on the back of the saw.

The best and most effective, in my opinion, is the disc resisting pulley. Though friction is not entirely overcome by this principle, it is so reduced that the saws do not heat. The back thrust is received on the face of the pulley, and the resisting area is distributed to some 7/8 in. of the saw's plain edge; consequently, this system may be accepted as practicable, as fewer breakages of saws occur when it is used than with any other arrangement. The top guide should invariably be placed as near the wood as possible, as the saw is thereby released of strain.

Other Important Features

Another important feature in connection with band saws is the amount of tension given and the nature of the device used to effect same. For this object there are two contrivances in use, being the spring and the weight. For other purposes of pressure the weight and lever system is current on many wood-working machines. Of course, in some instances the weight may be more convenient to use, but, generally speaking, the spring principle for strain or pressure is far more effective than lever and weight. With the weight, when a sudden shock is given, there is no instant yield as with the spring. For instance, a weighted lever which applies a pressure of 14 lbs. will resist a shock of 2,000 lbs. if suddenly given, whereas the spring principle will instantaneously yield however quick the shock is rendered; consequently, for pressure in general, and for band-saw tension in particular, the spring system is more efficient and less severe on machines.

In my opinion a very important feature in band-sawing machines which affects the life of the saw is the diameter of saw pulleys. Saws having small pulleys are generally run at a higher speed, i.e., the pulleys have more revolutions per minute while in motion than those with large wheels. These conditions make it a mechanical consequence that when the wheels are small and running at perhaps excessive velocity, together with the saw in action cutting contracted circular work, the blade, however high class the quality of its steel may be, cannot withstand equivalent duration of service as when run on wheels of large diameter and driven at a slower rate. The wheels on small band saws should not be less than 42 in. diam. In some cases, for bevel work, this saw is made to tilt from its vertical plane, instead of the table being adjustable to various angles. This arrange-

ment, though equally efficient for bevel cutting, is not so convenient as the canting table. To saw bevels at a higher angle than 45° is not advisable. Bevel cutting at any angle subjects the saw to more or less friction, so that when angles of between 35° and 45° are being sawn, the saw should be fed at a slower rate of speed than for ordinary square cutting; besides this, the timber should be supported on the under side to relieve the saw.

As previously mentioned (leaving out of consideration the diameter of saw wheels) the most prevalent trouble with band saws is breakage. In nine cases out of 10 this is due to severe feeding and subjecting the saw to traverse circles or curves which are too contracted for the width of the blade, so it behooves operators to pay particular attention to this feature of the manipulation of this machine. As is well known, the inside of a circle and the outer side of a circle or a section thereof are not identical. Thus, to saw fellows of 3 in. or 4 in. wide or similar work on the same line of circumference is not correct. Of course, if there is a fence used for such work there is no alternative; yet it is not practicable to use a fence for such work, as such should invariably be lined off from template, which generally means that two operations must be performed against one when the fence is employed. With wide circles of 8 ft. or 10 ft. radius, where the pieces are but 1 in. to 2 in. thick, no perceptible inaccuracy can be shown, so work of this description can be accomplished satisfactorily enough, though the fence is used. It is expedient to employ the fence when and wherever possible, as straighter and steadier cutting can be effected with its use than is possible without it. Besides, as lining off can be dispensed with for many classes of work by this method, increased production invariably ensues.

Furniture Manufacturers Going After Export Trade

The Furniture Manufacturers Association have appointed a committee to select a suitable man to act as a representative of the organization, in London, England, and to push the sale of Canadian furniture on the European market. There are several names under consideration and an announcement will be made in the near future. It is the intention of the Association to keep in close touch with the Canadian Trade Commission which is at present in London, Eng., and to send their representative over as soon as they are advised, from London, that the time is opportune.

The committee consists of the following members: J. G. Hay, J. R. Shaw and H. B. Smith.

As is well known there is at present in London, Eng., a Canadian Trade Commission, whose duty is to see that Canada secures her full share of European orders. This Commission was appointed by the Canadian Government and consists of the following members: Lloyd Harris, chairman; Frank Jones, R. J. Young, secretary.

The London commission secures the order and sends them to a Trade Commission which sits in Ottawa. The duty of the Ottawa commission is to deal with the orders, see that they are properly and fairly distributed among the manufacturers and dealers interested.

The Ottawa Trade Commission includes Chas. Thomson, chairman; C. B. McNaught, A. B. Thomson, and has power to add, as associate or advisory

members, representatives of the different industries concerned.

To date the London Commission has secured lumber orders amounting to \$40,000,000, to be delivered within a year. It is in touch with the furniture dealers there and expects to be able to secure several large orders for furniture in the near future.

The Canadian Government is financing all orders by granting credits to the governments of the different countries concerned. This will have a very marked effect on the volume of export business secured.

The Woodworking Outlook is Encouraging

While at present conditions are quiet in the woodworking trade, which is naturally expected at this season, yet there is a strong feeling that the situation will quickly improve and that 1919 will mark the ushering in of an era of prosperity such as this industry has seldom known.

Stocks are reported as being low. Enquiries are commencing to come in and indications are that there will be a considerable amount of special work offering in the near future.

The general impression is that present prices will be maintained. Lumber and supplies remain firm, while the leaders of the larger labor organizations have made it clear that they will not tolerate any reduction in wages.

A large amount of deferred building will be gone ahead with this year. Better "Housing Schemes" are engaging the attention of the different governments and municipal bodies. The Dominion Government is prepared to advance the sum of \$25,000,000 to aid in this work. As far as possible this money will be evenly distributed among those going ahead with their "Better Housing Schemes."

The housing problem is acute. Homes and apartments are leased as soon as vacant, and the cry is for more to rent. Rents are high and still rising and they will soon reach the mark where it will be a good investment to build for rent. Some believe this condition has been reached and that spring will see a resumption of the building of houses, apartments and semi-business blocks. These conditions do not apply to any one section, but are general all over Canada.

The authorities at Ottawa are planning an immense building programme for this year. This schedule includes not only the finishing of work under construction and deferred jobs, but contemplates the erection of hospitals, convalescent homes, and public buildings and offices, so as to enable the government to give up all rented premises.

This is sound business. Not only will work be provided for a large number of men and a demand created for an enormous amount of material, but the saving in rent will more than carry the interest on the amounts expended on these new structures.

Viewing the situation as a whole the woodworking industries have no grounds for pessimism. Their watchwords should be enthusiasm and optimism and their policy one of aggressive action.

The end of the war affected the silk industry by permitting Italian and French distributors to get back into work, but their efforts cannot produce much for export for a good while. Meantime the market for Japanese and Chinese output continues active and prices are remaining at war-time levels in most cases.

Upholstering and Trimming

A Distinctive American Design

The national growth of patriotic fervor has awakened and developed a keen appreciation of and a real pride in articles "Made in the U. S. A." We are enjoying delights in various phases of American beauty and in American life which have heretofore been unobserved, says a writer in the "Furniture Manufacturer and Artisan."

It seems a most fitting time for a revival of interest in the Phyfe style of furniture. This style, although not generally known, is possibly the nearest American designers have come to producing an immortal Period style. It is the work of Duncan Phyfe, the greatest American cabinetmaker and one whose designs are not inferior to the greatest French and English designers of the famous Georgian period.

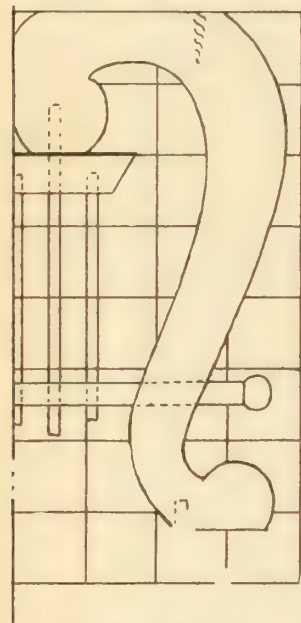
While Duncan Phyfe lived and did his work in New York City from 1795 to 1854, little is known about him as a business man except indirectly through his family. He was of Scotch birth, and was brought with his several brothers and sisters by his widowed mother to this country in 1783 or 1784. He received little schooling, but in his early life studied incessantly the work of Sheraton, Adam and classic designs. The Pompeian designs appealed as strongly to him as the Brothers Adam, from whose work he got much inspiration. This influence of the classic is expressed in the exquisite lines of his chair backs and legs, and the restrained use of the medallions, ovals, acanthus leaves and plumes in decoration.

His finest work was done in the early part of his career, the Adams-Sheraton period. After 1818 he yielded to the influence of the popular demand for the French Empire style made by the ascendancy of Napoléon. While his last work, known as the Victorian period, was of rosewood and was heavy both in design and in manufacture.

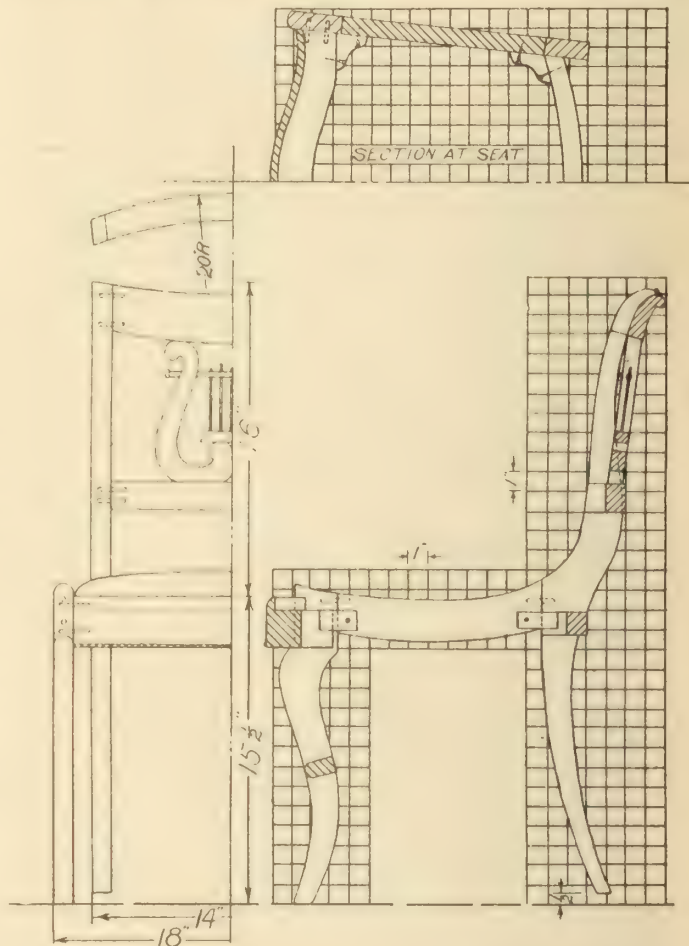
Although Phyfe at times employed as many as 100 workmen, we marvel the more at what he accomplished and that the workmanship on all his furniture was flawless. For when his fame spread abroad he was swamped with special orders. Early in the nineteenth century he was commissioned to build a four-poster bed for the king of Hayti, to which he gave much of his personal attention. From the point of craftsmanship he considered it one of the best things he ever did.

It is only this first work in which we are particularly interested.

For all his first work Phyfe imported the finest quality of mahogany from Cuba and San Domingo. His decorations consisted of panels of crotch veneer inlaying, grooving and the lyre, the latter being the



Detail of the back of the
Phyfe Music Chair



Drawing showing detail of the construction of the Phyfe music chair

one thing which expresses his individuality and marks him as a great designer and artist, with a wonderful mastery of graceful, delicate, sweeping curves and exquisite proportions.

He specialized in chairs, sofas, tables and sideboards, pieces which to-day are treasured like precious jewels. Perhaps the finest private collection of Phyfe's furniture is owned by R. T. Haines Halsey, New York, whose courtesy at the time of the Hudson-Fulton exhibition made it possible for the public to view these remarkable pieces.

The accompanying cut is an example of an adaptation along the lines of the Phyfe style of two chairs which were constructed in the writer's class by a first year high school boy for his music room. The drawing and stock bill are self-explanatory.

However, a few notes of the operation may not come amiss: After making a full-size drawing of the

chair, construct patterns of all curved parts from some inexpensive thin stock. Get out stock the bill calls for, giving particular attention to having the grain of the legs straight and parallel with the joints to the side rails. Mark from patterns and saw to size with band saw, jig saw or turning saw, and shape with spokeshave. Make all joints and corner braces; assemble all parts without glue, except the lyre, which is fitted after chair is glued.

This having been done, take apart and glue each side and dry. After the sides are dry, assemble all parts; insert No. 9 brass wires in the lyre for strings; fit in place and fasten with screws through holes made before assembling at the bottom and two quarter inch

spindle heads, and the belt sander of the same type with oscillating attachment or improvement, whichever you want to call it. And it seems that all have their uses and points in their favor.

The simple spindle sander is the easiest to operate and keep in order, but if it is of small size, for short curves, it is hard to keep the sandpaper clean, and the oscillating spindle will turn out more work, but it requires more thoughtful attention on the part of the operator to hold the stock steady against the varying movements. This is perhaps why a man was on the job here instead of a girl for on some of the work it took a pretty strong grip and close concentration to get results right.

The belt sander operating over table-spindles and

STOCK BILL						
Item	Material	No.	Par	Length	Width	Thickness
1	Mahogany	2	Front Legs	18"	4"	1"
2	"	2	Back Legs	32"	6"	1"
3	"	2	Side Rails	12"	1"	1"
4	"	1	Front Rail	16"	4"	3"
5	"	1	Back Rail	14"	3"	1"
6	"	1	Back Top	14"	4"	2"
7	"	1	Back Center	14"	2"	1 1/2"
8	"	1	Lyre	8"	8"	"
9	"	1	Lyre Bars	14"	"	"
10	Gum	4	Corner Blocks	3"	4"	2"
11	Poplar	2	Seat Frame Sides	14"	3"	3/4"
12	"	1	Front	12"	3"	"
13	"	1	Back	10"	3"	"
14	Composition	1	Molding	18"	"	"

dowels at the top. Clean, sand, stain and give regular varnish finish rubbed dull.

Either padded or spring upholstery may be used for the seat. In this model springs were used with green velour for a covering. The little beading across the bottom of the front rail may be purchased for a few cents, but for an advanced student here is a splendid opportunity for the grooving common to the style. Carving on the lyre, which is another feature, might also be attempted.

The Sandpapering of Chair Work

The sanding of chair stock brings into play more different machines and appliances than almost any other line of woodwork, because of the great variety of shapes involved. For this reason, because of the small sizes and the many shapes and angles, chair work in the earlier days of machine progress involved a large amount of hand-sanding. There is still some cleaning up by hand, but we have been making steady progress in putting power appliances at this work, progress that has involved the exercise of much ingenuity and the development of interesting ideas and appliances.

I was impressed with this thought recently while watching a number of different sanding operations going on in a chair factory, says an American writer. Over at a row of drum sanders of considerable size and length, girls were taking over quite a lot of the work of sanding rockers, only a few men remaining, evidently to give advice and instructions when needed. The girls were doing very well, too, and seemed to have a quick sense of touch, which enabled them to get good service out of the sandpaper.

Near by a man was sanding shapes on an oscillating-spindle sander. Watching him set me to thinking of the different familiar appliances for doing this work and speculating upon their merits. There is the plain spindle sander that simply revolves and does not oscillate, then there is the belt sander running over



The Phyfe music chair

forms, and provided with a flat fence for certain work, comes in for a wide range of uses in sanding chair stock. The straightway part can be used for straight edges and outside curves, while the turn around the spindle form makes a place for the inside of shorter curves. This type of belt sander has been shown lately with at least two new features. One is the running of a leather or cotton belt under the sand belt, to furnish a cushion at the straight flat fence and save wear on the back of sand belt from the pressure of the stock against it while sanding. The other is the adding of the oscillating feature to this type, so that it will act similarly to an oscillating-spindle sander.

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The Production of Toys Increases

The toy industry of Canada after overcoming many difficulties, seems at last to be established on a firm basis. The total production for 1918 is estimated at \$800,000, an increase of fifty per cent. over the year 1917. The total value of toys imported for the fiscal year ending March 31st, 1918, is given as \$1,086,811. In 1918 then, from forty to forty-five per cent. of all the toys sold were of Canadian manufacture.

The toy makers have had many things to contend with. Scarcity of labor, high wages, the necessity of importing certain parts, and American competition, are a few of them. Bisque sand has been discovered recently in Hastings County, and the bisque dolls' heads that are now being manufactured are of fine quality.

It is in the production of wooden toys that the local makers excel. Wheeled toys of various types, white enamel toys comprising wooden dolls, beds, carriages in great variety, fibre dolls made of wood pulp, etc., were all in great demand.

The entire industry has successfully passed through the initial stages of development and is on the whole amply provided with capital to take care of future expansion. The prospects for 1919 are particularly bright.

Will History Repeat?

Under present circumstances it is natural that men in every industry should be seeking to forecast what will happen in the economic world when final peace comes. For data from the past one has to go back to the Franco-Prussian conflict. Capt. W. P. Digby has, with much care, collected a mass of figures bearing on this, and he gave the results in a paper recently read before the Institution of Electrical Engineering. Capt. Digby showed (1) that foodstuffs, taking wheat as the key, did not revert to their pre-war value until four years after the close of hostilities (May 1871), (2) that wages in neutral countries like the United States and Belgium took, respectively, three and seven years to revert to their old money value; (3) that wages in the defeated country remained until 1876 below those in the victorious country, in neither case reverting to their old value in seven years; (4) that wages rose in both belligerent and neutral countries after the close of hostilities, due in part to high food prices, and in part to the synchronizing of a period of good trade, with the demands to make good much of the material destroyed in war or diverted in other uses. Of course, conditions have vastly altered in 47 years. Still, Capt. Digby's facts must be held to be an argument of some weight against the theory of a speedy return to pre-war values.

Don't Despise the Small Order

There is a disposition on the part of some manufacturers to turn down an order coming from a concern that is not doing a very large business; or if the order is not of a certain size. It would be well for these concerns to remember the maxim: "It is a long road that has no turn." Time passes fast, and the turn in the road may soon be in sight; then what will we see? One firm that reached the turn in the road and saw the concern whose orders it politely turned down doing a larger business than any of the firm's customers. They saw their travelers calling regularly on the concern and trying to get "a look in," but there was nothing doing, because the former treatment had still left its sting.



Some Facts About Inert Pigments

By Gordon Kent

There is, without doubt, no department in the manufacture of furniture more important than the finishing room. It is the finish which often makes or loses a sale; and there is probably no individual of whom more technical knowledge is required than the foreman finisher.

The foreman finisher and those immediately under him are the most valued and necessary partners in the manufacture of fine furniture. The more he understands regarding the nature of the materials he uses, the more intelligent is his employment of them.

Now a great many finishers know what inert pigments are, that is, they have a general knowledge of their use, and yet there are many if called upon could not tell in detail exactly what inert earth pigments comprise. The fact of the matter is they are called inert, because they do not effect in any marked degree the color strength of other pigments with which they are used. They are used principally as adulterants, or sort of extenders, to add weight, and to reinforce other materials and are valuable for these qualities. They are inexpensive and therefore, play an important part in the reducing of material costs. They are, of course, not suitable to all grades of work, but must be chosen and used in proportions which will insure added value to the finished product. They must have good body covering and wearing properties.

One Source of Supply.

Inert pigments come from various forms of crystalline and amorphous deposits, which are taken from mines. The crude lumps are crushed and ground, then washed and graded. The grading is done by straining through various grades of cloth. That which goes through the finest mesh is, of course, the best quality. The three principal grades are known as, gilders whitening, paris white and commercial whitening.

Probably the inert pigment with which we are most familiar, is what is known as whitening. It is a very pure form of non crystalline, calcium carbonate, and is mined in England.

Gilders white is used in dry color making, also in calcimine, and we find a considerable market for its use in putty, cement coaters, fillers and in many other coatings requiring a material of this character.

Paris white possesses a tendency to hold other pigments in suspension, and also acts as a neutralizer in case any free acid exists in the vehicle. While it is employed in paints, it is generally used in undercoatings, where heavy sanding is necessary, and also on work which is to be sold at a low price.

Other Forms of Inert Pigments.

There are, of course, other forms of calcium carbonate which finds use in the paint trade, but they are different in character. Barytes, used chiefly as an adulterant of white lead is a material of high specific

gravity, and is also used to add weight as a substitute, and is extensively used in dry color making. It is chemically inert so has no effect upon the pigments or vehicle. It is non-absorbent and therefore is valuable when used in combination with bright colors, for it does not detract from their original brilliancy.

Silica and silax are both oxides of silicon, the former containing a small amount of alumina and water, which gives a very soft feel with less of the gritty tooth of silax. Silica comes from siliceous earth of fossil origin, and when thoroughly cleaned, strained, etc., is ready for use. Silax comes from a sort of a quartz sand rock and Iceland spar. It is very hard and requires hard grinding, and in case of the quartz rock it is necessary to heat the rock and then quickly immerse it in cold water. It is disintegrated by this process allowing the quartz to be ground, strained and washed. In most of the paste wood fillers, crack and crevice fillers, etc., you will find that silica and silax are used.

White Pigments.

When you come to white pigments you reach a material which is used in most all furniture enamels, paints, etc. Perhaps the best known white pigment is white lead, and is on the market as basic carbonate of lead, but the carbonate of lead is rarely used in enamels except in a few cases where it is employed in the manufacture of undercoatings. It is perhaps more strictly a proposition for the house painter.

Zinc oxide, however, is a white pigment which is used in practically all enamels. Two methods are used in its production, one known as the American process, and the other as the French process. In the latter the metallic zinc is sublimed or burned in a current of air, and the product of this burning is collected in carefully closed chambers as oxide of zinc, a fine white powder and perhaps the whitest of all pigments.

Metallic zinc does not occur in nature, but is smelted before being put through the sublimation process, and this double handling process probably accounts for the price of the French process zincs.

You will recognize many standard brands of pure white zinc oxide which are on the market to-day, some of them being the Florence brand of French process zincs, white seal, green seal, and red seal zinc oxides. These oxides are made from the metallic zinc and run between 99.75 per cent, and 99.98 per cent. pure zinc oxide.

The American process is quite different as the metallic zinc is extracted through distillation, which is accomplished by the proportionate mixing of the crude zinc ore with finely powdered anthracite coal. This combination is then burned in a closed furnace provided with perforated grates, and the distillate is conducted through a series of cooling chambers, after

which it is collected, graded and put out in bags or barrels. A few impurities will naturally find their way into the finished product, but taken as a whole the oxide formed through this process is very uniform in quality and finds a ready market.

Zinc oxide, being extremely fine, requires more oil perhaps than any other white pigment in order to render the thinned oxide usable. It is non-poisonous and will readily mix with any pigment, affords unusual covering capacity, under ordinary conditions, is not affected by atmospheric gases, and has no marked tendency to settle in the bottom of the package, particularly when ground and thinned with the proper vehicle.

Another Sublimation Product.

Another result of the heating or sublimation process, is zinc lead, which we sometimes call zinc white, and is made from low grade zinc lead ores, but is a very fine mixture of lead sulphite and zinc oxide, the proportions running from 42 to 48 per cent. lead sulphite, and 48 to 52 per cent. zinc oxide, which contain, of course, small amounts of other metallic compounds.

It is rarely used in enamels, but is found in interior finishes, and materials for outside work, its chief contribution being a stability in holding color when exposed to gases as its component parts are not affected. Zinc white resembles zinc oxide in its appearance.

Lead zinc is a product very similar to the one outlined, but contains a greater percentage of zinc oxide, and is made from a combination of western ores, containing proportions of lead sulphite which becomes converted to lead sulphite during the manufacturing process. These products, of course, vary in their composition according to the purpose for which they are intended.

Sublimed white lead is chemically an oxysulphate of lead, and is produced in a way resembling the American process of extracting zinc oxide.

The above may prove rather dry facts, but to the man who is really interested in his work they will give an insight into what inert pigments really are, and why they are included among the component materials which result in finishes for high-grade furniture.

The Cause of Varnish Blooming

"By Painter"

When we look at the dull surface of an unvarnished piece of wood or painting we see the material or pigments bereft of the greater part of their beauty. This is so because the light that falls upon them is scattered in all directions, some only of the rays reaching our eyes to light up the color they fall upon. Now, when we place a sheet of glass before such a picture, the color becomes much brighter, because the rays of light are no longer so scattered or diverging in all directions, but are reflected from the surface of the picture in all directions.

The sheet of glass is transparent because it is a continuous, unbroken sheet; the light rays pass and repass through it with very little alteration. If, however, we grind it into a powder, the rays are no longer transmitted through and through its substance, but are scattered from every particle in all directions (the water and powdering of glass in the tumbler referred to in the previous example correspond to the transparent sheet of glass in this). Consequently the glass is no longer transparent, but colored—white, in fact.

This is exactly the condition of a coat of varnish on a varnished surface. If the varnish is perfect in

every way it will light up the color beneath with a tenfold brilliancy. If, however, it becomes white and cloudy, it is generally so because it is no longer a continuous sheet like a transparent glass, but has changed into a fine powder. In such a condition the varnish no longer fulfils its purpose of brightening the effect of the surface on which it is spread, but it becomes blurred and dim, due to the opalescence—"bloom" or "chill," as this phenomenon is called.

This blooming is due to a physical change among the components of the varnish, owing, probably, to chemical action. Thus, varnish is composed of fine particles of resin, dissolved in turpentine and oil. If the resin has not been perfectly dissolved in the oil it will at once turn "milky"—that is, opalescent—when the turpentine is added to it in making the varnish. A cold draught of air, moisture, or continued dampness will produce the same effect on a freshly-laid coat of varnish—especially so with moisture.

This milkiness is partially due to the deposition of fine particles of camphor from the constituents of the varnish, and these little particles, reflecting the light instead of transmitting it, have the same effect as the powdered glass: that is, of allowing the varnish coat to possess color (an opalescent one) instead of being wholly transparent.

In the case of varnishing with a volatile varnish—that is, a "spirit" varnish, or one in which essential oil instead of a fixed oil is used—the volatile oil evaporates, leaving the resin in a finely dissolved, transparent layer on the surface on which it is laid.

Great care is needed to guard against sudden draughts, coldness, or damp absorption for the prevention of a cloudy surface of varnish. With "oil" varnish the same change takes place, but more slowly; but in these varnishes the change is not so recent, due to the deposit of fine particles of camphor from the essential oil, as to the evaporation of water on the surface, which causes a separation in a fine state of the resin from the oil.

The brilliant hues of the rainbow are due to various reflections occurring in an aggregation of particles of water, and a somewhat similar action occurs in the body of a varnish. Particles of water are generated in an improperly made or improperly applied varnish, especially so if the resin has been dissolved with an essential oil not properly rectified or absolutely free from aqueous particles. These particles of water commingle with the solid particles of resin, and the lighter fluid particles of oil undergo various internal reflections and refractions, so much so as to produce a bloom of opalescence instead of a perfectly transparent surface.

As alcohol varnishes are especially prone to this objectionable blooming, they should never be applied in the presence of moisture, but in a temperature of at least 70 degs., and should remain in such a temperature, uniformly maintained, until dry. This blooming should be distinguished from the film of blue which is due to coal-gas. In the latter you can trace your name, as on a smoky window-pane; in the former you cannot remove any part of it by mere friction.

The cure for the blue film is wiping with a soft duster, a silk handkerchief, or chamois leather, in addition to submitting it to the action of more air and sunlight. The cure for the blooming chemico-physically produced is heat or absorption of alcohol vapor.

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The Supply Situation

Shellac

The fact that the Government has removed the restrictions placed upon this trade seems so far to have had little to do with its selling properties. The demand is not at all active, but to the contrary is rather listless. Prices have stayed at fairly high levels, but buyers are not expecting them to remain up, and as a consequence are holding off the market to a very noticeable degree.

Another report says, all restrictions have been removed from this commodity. But this does not affect the importation, which is restricted to 5,000 tons up to and including March, 1919. Should business take a sudden jump, prices will advance. D. C. is holding at 86c and 87c; Oronge, 73c to 75c; Bleached, bone dry, at 80c and 82c.

Varnish Gums

The situation with regard to this commodity is much the same that prevailed last month. As in the case of burlaps, tonnage is now available for bringing in imports, but this factor has not as yet had a noticeable effect on prices. The demand continues good, and prices are still at rather high levels.

Linseed Oil

Just at present the trading in this commodity is dull, which is usual at this time of year. However, no efforts are being made to push sales as the supply of oil is somewhat limited, and at the prices prevailing sellers are willing to let things move along as at present and await the increased building operations which will create a new life for the linseed oil trade and will undoubtedly result in some price boosts. Present prices are around \$1.58 per gallon, with slight advance for smaller lots.

Turpentine

The market has changed little in a month. The demand expected to be brought about by the ending of the war seems not to have materialized as yet, and buyers say that they can get all the offerings they want at good concessions, and hence are not stocking up heavily. Instead, they await a further break in prices.

A New Wax Offering

A new wax from Mexico is now being offered that from the description seems to be in the beeswax class and might be of interest to those using wax for polishing. Trade Commissioner Edward F. Feely, Laredo, Tex., has sent, from there to the Bureau of Foreign and Domestic Commerce, samples of what is called Mexican cadellila wax. This wax is of vegetable origin. He says that the commission merchants there are prepared to furnish it in quantities up to 60 tons per month. The wax is described as of light color, very hard, and of a high melting point. It will dissolve in turpentine and make a good varnish, and can be bleached perfectly white if desired.

Those desiring to see samples or obtain further information may write the Bureau of Foreign and Domestic Commerce, Washington. Refer to file No. 40136.

The manufacturers of finishing materials are always ready and willing to be of service to those who use their goods, and finishers should not hesitate to consult them when in any difficulty. Bad results are frequently the cause of just some little detail in the process of application which the makers could easily explain.

Furniture in Great Demand in Britain

The Furniture Record of London, England, in a recent editorial, says: We need hardly emphasize the importance of speeding up production in the furniture factories. The shortage of furniture of every description is notorious. The greatest rubbish is fetching extraordinarily high prices. It is time British firms came on the scene and restored the trade to its pre-war level. There is a big present demand for good, well-designed, medium-class furniture; there will be an immense demand during the next few years, and furniture manufacturers may look for a long period of great activity, retarded only by a lack of materials. Looking at the conditions all round, it is certain that a rich harvest awaits the enterprising firms who are first in the field.

The Woodworker of London, England, also remarks that, "Judging from the prices upon various kinds of furniture in the shops, one would imagine that there is such a furniture scarcity that it will keep the trade busy for a long time."

In view of the foregoing statements it would appear that there is an excellent opportunity for the furniture manufacturers of Canada to work up a large export trade with the mother country. With Canadian made furniture once firmly established on the British market this trade would in all probability be a permanent one. Now is the appointed time and it calls for foresight and prompt and aggressive action on the part of the Canadian furniture men.

The Furniture Outlook Across the Line

Anything in connection with the furniture situation is always interesting. As conditions in Canada and the States are controlled by practically the same factors, the following summary of the furniture outlook, as it applies to the manufacturers of the middle states, is worth reading:

Demand for lumber, especially the hardwoods, bids fair to increase almost immediately in one particular manufacturing line which has been very quiet during the war, but which, with the signing of the armistice, gave forth vigorous signs of renewed life. This is the furniture line, a peace essential, but in the war time largely a non-essential.

Furniture manufacturers in the Chicago district, are, according to reports available, preparing for an unprecedented era of prosperity. It was declared here to-day that many plants, long since turned into production centers for other lines of goods, will soon be making furniture.

Encouragement has been lent to the manufacturing situation by the announcement of the local dealers association executive that the increased demand for furniture is already reaching surprising proportions. Retail dealers, particularly in the smaller towns of the country, have been hard hit by the war. With the stoppage of residence construction there was nothing to do in the way of furnishing new houses.

Both dealers and manufacturers felt that their patriotic duty consisted in using only such labor and material as could not be used for war essentials. This business fell off all along the line, and with it production. The signing of the armistice started the wheels to revolving again, and manufacturers here are accordingly happy.

Saving More—Getting More in Your Finishing Room

Looking about for means of getting greater production speed and economy and improvement, the experience of one manufacturer doesn't always offer a solution. But when this experience is multiplied by thousands, it points to a proved and profitable way by which to finish.

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The Future of the Veneer and Panel Business

By S. B. Anderson*

I take it that I am to consider the near future of this trade. There can be no question about the position these products will continue to occupy in the general wood-producing trade. Their position is won and will be maintained. The recent growth of the veneer trade has been extensive. With the growth of the furniture trade and the dependence of this trade largely on the panel factory for its panels and tops—with the growing demand for cheap packages and the demonstration of the availability of cut lumber for the manufacture of the lighter packages—with the remarkable growth of the wire-bound package the veneer mills are becoming in a degree as common as the lumber mills. Nothing can replace this product. It is unnecessary for me to remind you of the position the panel factory has attained.

Its position will be retained as long as regular panel and top factories can make and sell their product at a less price than it can be produced by the consumer. It is as impractical for the smaller consumer to make his own panels as for the shoe factory to make its own pegs. A good business for the panel factory is assured as long as good work is turned out at a reasonable cost and a fair profit and general business is good.

The Future We Must Deal With Now

If general business is good this will be reflected in the veneer and panel business. What are the conditions facing business in general? We are about entering on a transition period, during which business must adjust itself from war conditions to conditions of peace. There are some untoward conditions to be faced while in this transition period. There are many government contracts placed which will be cancelled, leaving raw material bought at war prices in large quantities on the hands of the manufacturers. Very large amount of supplies of various kinds are now held by the government which cannot be used by it, and sooner or later be placed on the market. The authorities at Washington have given assurance to the representatives of the contracting manufacturers that the government will not work a hardship on the manufacturers who worked faithfully to provide for its wants when in distress by cancelling orders without making proper provision for absorbing the loss resulting therefrom. Furthermore, that supplies of non-perishable manufactured goods, of which there is no scarcity, will not be thrown recklessly on the market, thus demoralizing business. On the contrary, the advices of business men interested in the market will be sought and the utmost care exercised to unload with the least possible jar to industry. A large percent. of the manufacturing capacity of the country must be taken from war work and placed on work of

peace, and nearly four millions of men now in the army will be returned to peace occupations. Briefly, this is a statement of the difficulties facing business.

Shortage of Commodities and Materials

On the other hand, the world is short of goods of all kinds—warehouses are empty, stocks everywhere are low; manufacturers have been diverted from regular work to war work; crops have been good—money is plentiful; under the new banking system no panics will frighten us; the courage of the people is high, their hopes are exalted—supplies of raw material are abundant; labor will very soon again be plentiful and well paid; life will move along in its wonted course, with the usual deaths and births; new families will venture out with the old wants to supply; the light buying of the past year or two will give way to the usual expenditures. All this will bring a good, normal business. This much for this country; but in addition to this, the world stands denuded before us and must be clothed. England will want our raw materials in wonderful quantities. France, Belgium, Italy, Russia and all eastern Europe will want our manufactured goods. The Orient will demand our cotton, cotton goods and machinery. Spanish America is just learning that its northern neighbor can supply in large quantities, goods that have heretofore been bought in Europe. In fact, the whole world must look to America for supplies, and we have them. We have the supplies for the ordinary demands of life; and in addition to all this, western Europe must be rebuilt, and again we have the supplies. It appears to me that the only question is, will we be ready to meet the demands. I think we will. It is estimated that one-half of the manufacturers of the country have during the past two years been devoted to the manufacture of war material. To return to the usual occupations of peace of this force, together with the millions of men for the past year engaged in war will produce a profound effect on economic conditions. Many of these men will engage in productive occupations, thus swelling the productive capacity of the world. Many factories now engaged in war work must return to the production of articles for every-day consumption.

Peace Demands Will be Heavy

On the other hand, many workers of to-day will, on the demobilization of the armies and the return of the soldiers to the regular peace occupations, retire from productive work and return to the more congenial occupation of home making. We must not overlook the fact in this connection that these men, while becoming producers are still consumers, and while food and clothing will not be bought by the government for their consumption, they will continue to be consumers of these articles. Steel and iron will

*Anderson-Tully Company, Memphis, Tenn.

no longer be required for shot and shell, rifle and cannon, but the demands of peace will be enormous. Building has ceased—railroad extension has become a thing of the past—railroad equipment has not kept pace with the demands of trade. These suspended operations must be resumed. If our steel mills will keep pace with the demands coming from these quarters and take care of the ordinary calls, it appears to me that their present activity will continue unabated. This is but an instance of what demands will be made in the productive industry of the country. I trust we will meet the situation fairly and with courage and with judgment. We must expect a recession in prices. This should not be unwelcome. I do not take this position from altruistic reasons, but simply as a good business proposition. We cannot hope for trade outside our own country for our manufactured goods unless we are able to meet competition, and competition will be keen.

Great Britain is Prepared

Even during the darkest days of the past few years reports were current that England and France, in spite of the agony of the struggle in which they were engaged, were preparing for after-the-war work. Their war factories, especially England's, were built with an eye to use in regular line work after peace should come. We cannot afford to limit our exports to raw material, but we must have our share of trade in finished goods—to get this we must be able to meet the price. If the goods offered are loaded with unnecessary costs ability to compete is lessened. If a piece of fine furniture offered in London or Paris is loaded with even one dollar of unjust profit to the veneer man or to the panel man—there is just one dollar in the way of competition. The cheaper goods can be sold the greater the ability of the consumer to buy and the greater the volume of business and the more general the distribution of the good things of life. We should look for our reward under the coming conditions in a larger trade with good profits—fair profits. While we must profit from the misfortune of the world we must avoid the temptation to profiteer. I fear our danger lies here rather than in lack of business. With the entire world crying to us for help; with our vast supply of material wanted—with energy—with a good supply of labor—with our means of local transportation—with the American Merchant Marine ready to transport our goods to the furthest quarter of the globe, and with our financial leaders laying plans to protect our foreign credit, only our inability to rise to the occasion can keep us from reaping the benefits of these wonderful times.

Economy and Efficiency Required.

In order that we handle the business that will be offered in the immediate future to the greatest profit to ourselves and to meet new conditions, we must practice economy—economy in buying, economy in manufacture and economy in credit. Old and slow methods must give way to later and improved ways. Efficiency in the shop, efficiency and clear figuring in the office must rule, methods having only the recommendations of ages if found defective must be dropped. Because certain ways of doing things have gotten us along in the past gives us no reason for refusing the benefit of other and better methods. The carrying of large credits on our books, instead of forcing a prompt settlement with cash on cash goods and with a trade acceptance on time goods is a great economic waste. As

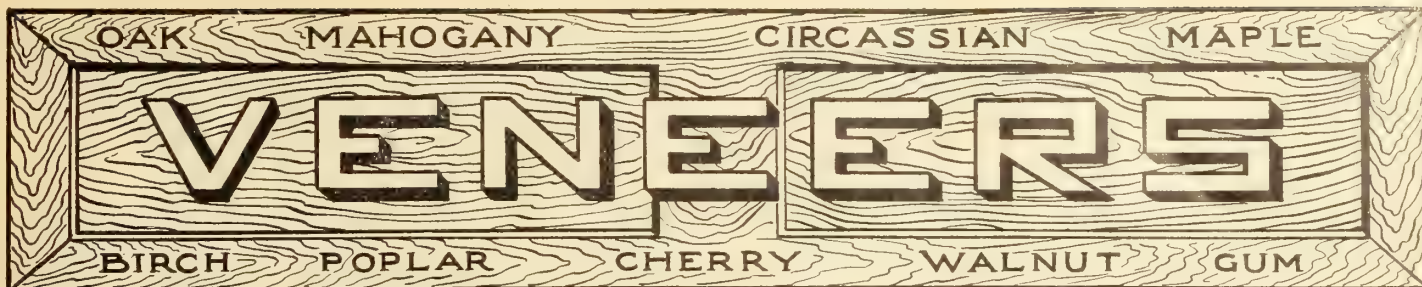
manufacturers we should refuse to longer perform the functions of the banker. I believe that in order to meet the coming demand, foreign and domestic, and to handle it successfully, and to gain the highest success in the contest ahead, the banker must do the banking and the manufacturer eliminate this branch of his work. The extension of open book credits is the extension of banking favors without exacting bankers conditions.

A Word Foreign to the Subject.

A result of the war just closed is the great progress of democratic institutions throughout Europe. For many years the struggle between autocracy and democracy has continued, and the last effort by autocracy to intrench itself and retake lines won by democracy has resulted in the practical overthrow of autocracy, and to-day democracy is enthroned. Now, the problem to work out is to make this great victory of the greatest benefit to the people of the world. It will possibly be considered heresy, but I sometimes doubt the automatic benefit to the individual flowing from political liberty. I believe in political liberty, but not as an end, but rather as a means to an end. Political liberty must lead to economic liberty or its greatest good is lost. We will fight for our political liberty, but I would like to inquire how many of my auditors failed to register for the last election, or how many habitually fail to avail themselves of the privilege of exercising their power of participating in the rights of governing themselves. We fight for universal suffrage and stay at home election day. The theory of democracy is equal right, but this can only be attained through economic freedom, by this I mean the opportunity of every man to participate in the good things of life as well as to participate in the ordinary functions of political life, to have an opportunity to earn a good living for his family, as well as to have the privilege of casting his vote for president. This country must reap some of the benefits coming from the great war. Europe will realize great advances in political freedom and see the passing of autocracy. Our reward must be other than political. It must be spiritual and must be made apparent in the economic advance of our people. I do not mean by this, only a growth of foreign trade and a great addition to our national wealth—both of which will come, but I mean better distribution, more equitable division of the earnings of capital and labor, I mean the creators of wealth shall be its sharers, that the producer shall have a bigger share, that the reward of faithful, hard and continuous work shall be more than a meagre present support and destitute old age, that the reward shall be a fair division between the capital that makes the opportunity to produce and the workman who makes the earnings of capital possible. It cannot be denied that this division in the past has not been on a fair basis. I do not mean by this that extravagant wages will be paid, but I do mean that after fair wages are paid and a fair return is made to capital, the producer shall have some interest in the residue of the profits. Labor without capital is helpless—capital without labor is dead.

Closer Co-operation Between Labor and Capital

I look for a partnership between the two to be on as fair a basis as a partnership between owners. I hope to see the day when the faithful workman, who has spent his best days in an enterprise, will be considered to have vested right as sacred as that of the owner of the capital invested, and that he will be assured of as comfortable an old age, based on his habits of life, as is



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Give your business to the man who will spend his time and money to get in touch with you. He deserves it—if his stock and prices are right.

his employers. To work out a plan by which this may be secured is the task up to the employer of labor. I hope we may all see the vital necessity for this work and may all be ready to welcome any practical plan to bring the results required. I do not in this, urge reward to a workman simply because he is a workman more than I do to an employer simply because he is an employer. The reward of one must come from intelligent and efficient management of his business and to the other from faithful and intelligent doing of his task whatever it may be. Each man, employer and employee, must do his best, indifferent labor as well as indifferent business management must bring failure. If either hopes for success it must come through faithful, intelligent and industrious effort. As the greatest success in business comes to the best business man, so must the greatest reward come to the best workman. Reward must be based not on the hours, but on the production, on the profits from each man's effort, be he proprietor or employee. It is either efficient work or scarcity of work. We want to pay high wages, but high wages must produce corresponding results. We will soon be in competition with the outside world for the world's trade and only by the best efforts alike by the employer and workman can we hope to get our share of this trade. Carelessness, inefficient management, pace making by the slowest workman will put us out of the running and we will again be selling our manufactured goods to ourselves only, with the inevitable results, scarcity of work, falling prices, falling wages, strikes, bankruptcy, suffering and general discontent. It stands both the proprietor and the workman in hand to earn his charges, either for labor rendered or for goods supplied. While the spirit of fairness and justice seems to have made great progress in the ranks of the employers, they themselves can do little, but with the co-operation of labor, labor organizations and labor leaders who must accept in the interest of labor the doctrine of efficiency, the conditions of which labor has justly complained in the past, will be ameliorated, labor will get its fair share and the nation will receive its benefit from the war. The menace of Bolshevism and I.W.W.ism is something that the world must deal with. I believe that with this spirit, as with the German nation, no terms can be considered but unconditional surrender. It has no place in our country and should be crushed out throughout the world. To an oppressed people liberty is apt to mean license and there is the excuse of ignorance. While treating our employees with justice and liberality, while working with them to inaugurate better conditions, to help them to a better and a higher plane, to see that their rights are protected in the fullest, that they get a more liberal share of wealth production, it stands us in hand to suppress with the utmost severity and the greatest thoroughness any and all indications of the spirit shown by the I.W.W.'s and the Bolsheviks.

Good Business a Certainty.

I do not believe that the war will be followed immediately by the Millennium, but I do believe that we have it in our power to move forward, and I believe the spirit of the times will force us to do willingly or unwillingly our part, be it large or small. The reading of history proves to us that periods of good active business follows periods of war, but this is a war of such horrid dimensions, of such dire disaster, that we may be figuring from a wrong basis in calculating on the usual post-war conditions, but I think not. For four years the world has been engaged in the work of de-

struction, peace has come and the attention of the world will be toward the old job of earning a living. The destroyed places must be rebuilt, the empty warehouses must be refilled, destroyed houses must be replaced, shell ploughed land must be reclaimed, the regular normal demand for goods must be met. It appears to me that all these calls will task us to the utmost, that our people will be employed, our factories filled with orders and prices in line to warrant fair return for capital and liberal return for labor. We should prepare for active work, put our house in order, be optimistic, keep a stiff upper lip and go ahead and reap the rich harvest.

Purchasing and Keeping Tab on Veneers

By A. Hudson

The first thing of importance and the thing that should dominate in the purchase of veneers is to buy the best stock possible for the purpose in hand.

In buying veneers the manufacturer should follow the one idea of buying at the very best prices, that veneer which is particularly adapted for his own purpose. This would include the buying of fillers and backs of cheaper grade face veneers, also veneer for drawer bottoms, etc.

The selection and purchasing of face veneers for the factory certainly amounts to more than merely placing the order for a certain amount of stock, or even yielding to the temptation to purchase bargain lots. Bargains are to be had in veneers now and again. It is, however, poor policy to endeavor to get them from every man who comes along. As a general rule it is much safer to pay a little more for veneers rather than to buy the cheapest grades on the market.

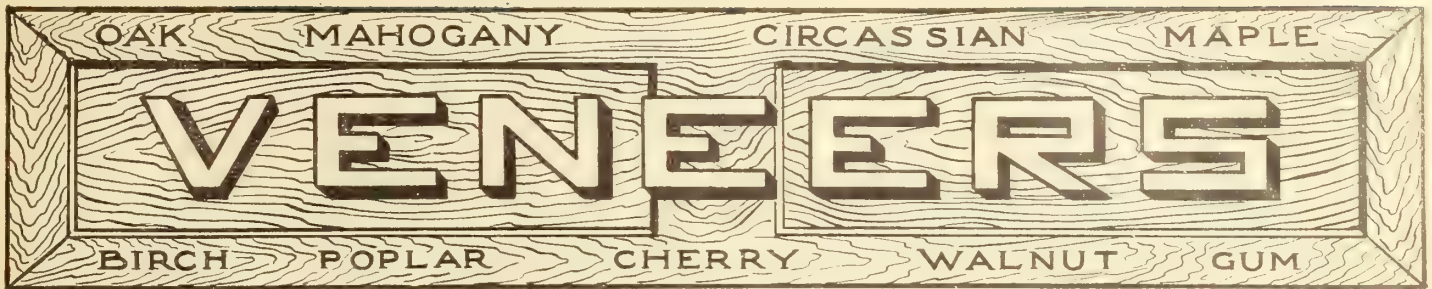
Visiting the veneer manufacturers and looking over their stock will often lead to a bargain and give the furniture or piano man exactly what he requires. The veneer man will probably be delighted to clear out that particular stock.

If manufacturers would refuse to buy defective stock and get over their bargain craze, defective veneers would be wiped off the market. The manufacturer of such veneers would have to improve his quality or go out of business.

The Better Way to Judge Veneers

In buying face veneers there are some things that should not be lost sight of; these have to do with the proper selection of the veneers as well as the relative values in the appearance of the product when finished. A veneer that is ruptured very badly, or with an uneven surface, is not to be recommended, and in purchasing sliced oak or rotary stock for face veneer it is always advisable to observe closely the way in which they have been manufactured. This can easily be seen by a close examination of both sides of the stock. The appearance may be all that can be desired as far as figure and color are concerned, but it is the excessive rupture of the grain at cutting that proves so injurious to the finished article, and I would be safe in saying that 60 to 65 per cent. of all trouble with hair line checks, after the stock is veneered and placed in the finishing room, may be attributed to this cause.

In purchasing veneers a very good plan is to make triplicate copies of the order, the original to be handed to the salesman, a copy given to the veneer foreman, and a copy left with the purchasing department. In every case it is essential to keep the samples of the flitches bought and then compare these with the



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VENEERS, 1/20 to 5/16 incl.,
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*Our Stocks will Satisfy
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All our logs come from just such Northern Growth Virgin Timber as this

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Fort Wayne, Ind.

stock shipped. All veneers should be inspected and measured on arrival.

It is wise also to give a lot number to each log and report this number to the cost department and to have all piles of veneers numbered. There are a few factories that do this. They lot and number each pile of veneers in their store-room just as they do their lumber in their lumber yards.

When the veneer cutter or foreman takes veneer from any pile, have the quantity reported, or if veneer is delivered on a requisition this should bear the job number for which it is intended. This should be handed into the cost department when through.

An Example

The advantages of this system are as follows:—

1. The exact amount of veneer that is required for a particular job is known.

2. A certain amount of waste is eliminated, for the foreman knows that he must account for the veneers.

3. It is known when the veneers are running low therefore it is not left to anyone to report, or forget to report, and cause a hold-up in the veneer department because of a delay in securing veneers.

4. With a perpetual inventory of veneers it is possible to quickly tell how many feet there are on hand.

If you are not using any system for the checking up of your veneers, try one. The introduction of a proper system also adds considerably to the amount of care used when handling them.

The handling of veneers is also a very important matter. Many manufacturers choose the dampest part of their factory to store their veneers. Keeping good veneers good is a very important point; they should

always be kept in a dry place. Every foot of veneer is future stock for the glue room. Carelessness in handling veneers after they have been received at the factory may nullify all the efforts which have been expended to put them in the best possible condition. It often happens that veneers are kept a long time before using, unless special attention is paid to the matter of drying before they are finally utilized, they are likely to go wrong on account of the excessive amount of moisture they have absorbed during the time that they have been stored away.

Be Sure That They Are Dry

Veneers should be dry before using; it is not safe to say that the veneer being wrinkled is a sure sign that it is dry. The man who lays veneer without re-drying, in some way, or being under the impression that because they are wrinkled they are dry, will certainly find his error when it is too late. Veneers become wrinkled during the drying process. This is an indication of an unevenness in the formation of the wood, which causes it to dry unevenly.

Crotch and fancy figured woods are liable to wrinkle more than plain woods, because much of the surface is made up, in varying degrees, of end wood. This end wood dries out more quickly than the parts that have not their open pores so exposed to the air. When these parts begin to dry and shrink it puts a strain on the slower drying parts. This causes the twist and occurs long before the veneer is properly dried. To put the finishing touches on a re-drier is necessary. The condition the veneers are in when the laying operation commences is just as important as the laying itself.



Come In and Talk It Over

When in need of veneers of quality in all the popular woods plain and fancy figures, visit our large, bright stock rooms and make your own selections. Talk over your needs with us and let

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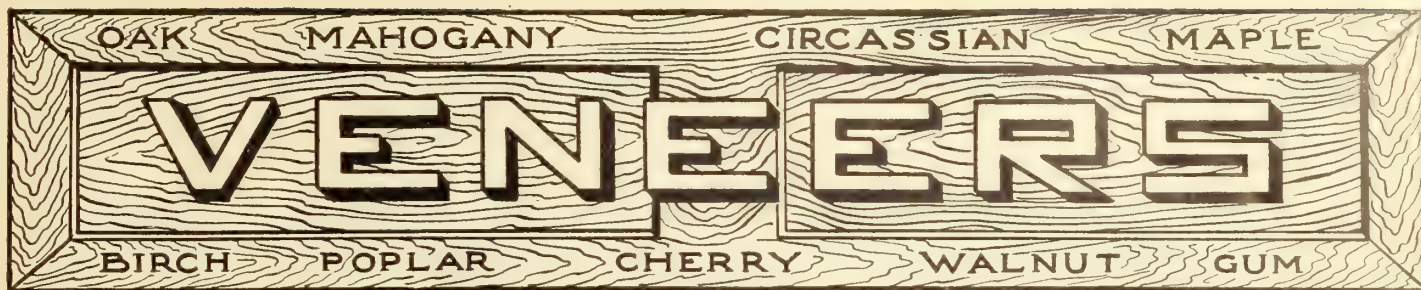
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10,000' 4/4" Sound Wormy Mex. Mahog. Shorts
 2,000' 4/4" to 12/4" Teakwood.
 5,000' 4/4" Mex. Mahogany Shorts, 1st & 2nds
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 6,000' 6/4" Mex. Mahog., 6' & up No. 1 Com.
 10,000' 8/4" Mex. Mahog., 6' & up No. 1 Com.
 1,000' 8/4" Mex. Mahog. Shorts, 1sts & 2nds.
 1,000' 12/4" Mex. Mahog., No. 1 Com.
 500' 12/4" Furniture cuttings.
 30,000' 4/4" Mex. Mahogany, No. 1 Common
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 30,000' 2"x2" and 3"x3" (cut to your lengths)
 up to 36" Clear White Oak Squares
 15,000' Log Run Birch (culls out) 1"
 10,000' Log Run Birch (culls out) 1 1/4"
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*Either Sliced, Half Round or Rotary
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 INDIANA

The Lumber Market

Domestic Woods

There is a note of expectancy in the local lumber markets. The buyers are inclined to withhold orders hoping that there will be a drop in prices. On the other hand, the dealers do not anticipate any easing up in values.

The cost of production has not decreased as yet, in fact the tendency is still upward. Labor is high and scarce. The return of the men from overseas is not expected to have any appreciable effect on the labor situation, for this season at least. The cost of supplies, of all kinds, remains high, with every prospect of increased prices in some lines. In view of these facts the cost of lumbering operations, both in the woods and at the mills, will remain at the present high level, and in some sections will go higher. Until there is a marked decrease in the cost of producing lumber it is not likely that there will be a permanent lowering of values.

There are a few other controlling factors that should be taken into consideration when reviewing the wood production outlook. The estimated total cut for the coming winter is from 25 to 35 per cent. below normal. The mills and dealers have allowed their stocks to run down to a comparatively low level. Numerous enquiries are coming in re lumber for export. In this connection, if the expectations of the lumber men are realized our old friend Mr. Supply and Demand will step in and, with good business in sight, will decree that present prices be maintained.

One thing that would tend to stabilize the present market is authoritative knowledge. This is something which it is practically impossible to secure. There is nothing left for the manufacturer but to make a comprehensive review of the lumber situation and form his own opinion then to back this conviction.

The dealers are not looking for business to start off with a rush. All are optimistic and are confident that there are big things in store for them in the near future. Buying is expected to be a little later in starting than usual, this being due to the tendency among buyers to play the waiting game. There is no sign of any inclination or desire, on the part of the lumbermen, to push the market. They are content to be patient and calmly await developments.

Imported Woods

The situation in imported woods has not changed to any appreciable extent since last month. In some sections there has been a certain amount of buying for local consumption, orders being placed for present needs only.

The forests of all the allied and neighboring nations have been practically depleted by the unprecedented war demands of the last few years. In Italy, France and Spain the governments have passed regulations which will practically stop all lumbering operations for some years to come. These countries will naturally look to Canada and the United States to supplement their decreased production.

Judging from reports from the different American hardwood centers the situation below the line is as follows: In general things are quiet, the volume of

business offering being very small. Inquiries are increasing, and the furniture and automobile industries are beginning to take an interest in the situation.

As a rule, prices are being maintained, there being no inclination, on the part of any of the dealers, to resort to price cutting to force the market. There are a few lines which show a weakening. These are certain lines where the government orders have been heavy and prices have dropped slightly since the demand has ceased.

The demand for quartered oak and white oak is fair. Walnut is in big supply with a very light market. Veneers are more active than they have been.

By calculating from an incomplete set of figures gathered by the Bureau of Corporations, the total stand of timber in the United States is estimated at 2,800,000,000,000. In the absence of anything better this has been tentatively accepted.

The total cut of hardwood for 1918 is estimated to be, in round numbers, 100,000,000,000 feet.

Recently, a vessel arrived in Boston, carrying a large deck load of mahogany. This is the first shipment of this wood to be reported since the lifting of the embargo.

Brazilians expect that the devastation of forests in belligerent countries and the great demand for lumber throughout the world will give rise to a heavy demand for native woods. No one country in the world possesses greater reserves of available timber than Brazil, whose comparative proximity to consuming markets should insure a great future for the lumber industry there. Foreseeing this, the Brazilian Government has instructed its consuls to furnish inquirers with every possible information regarding native woods.

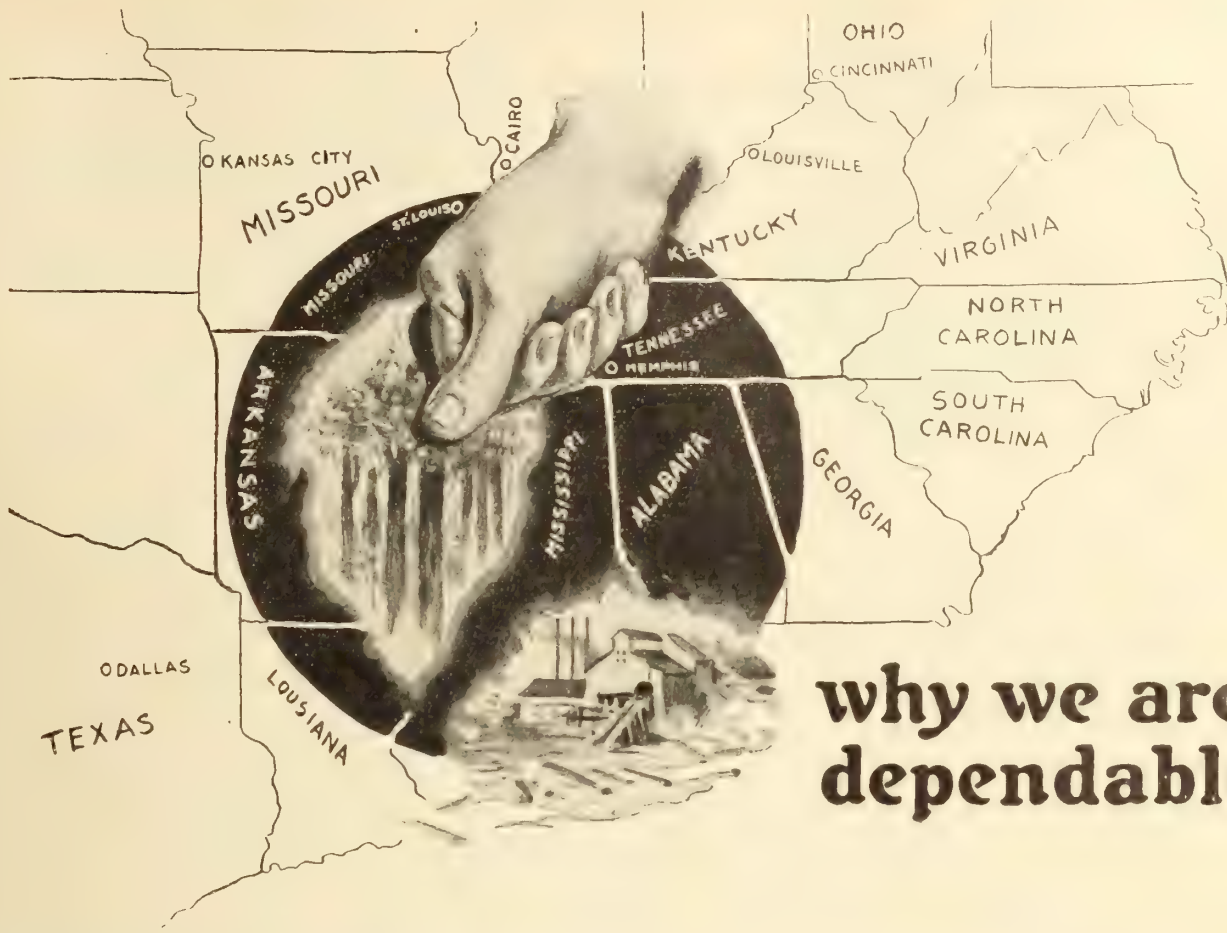
Good Openings in Woodworking Lines

Harrison Watson, who is the chief Canadian Trade Commissioner in the United Kingdom, in a recent letter to the Trade and Commerce Department, Ottawa, on "the present commercial situation in the United Kingdom," says in part:—

From a Canadian point of view it is unfortunate that the purposes to which a considerable portion of this war-time machinery must be converted, are to the manufacture of articles for which similar machinery in Canada must necessarily also be utilized. In this connection it is well to mention that this country has accumulated during the past few years a quantity of automatic machinery, machinery tools and other appliances suitable for "repetition" work, which is understood to be more than adequate for meeting any demand that is likely to arise, and moreover, the manufacture of all these articles is being carried on here now. However, the new conditions must create an increased and permanent demand for many Canadian goods, more especially those for the production of which Canada possesses natural advantages and facilities.

Lines which suggest themselves are manufactures of wood of all kinds, such as handles, dowels, box boards, turnery, etc., for the huge quantities of which used here Great Britain is almost entirely dependent upon other countries, and of the future provision of which Canada should be able to secure a large share, provided the industry is organized in the same adequate manner as in rival countries.

There is also likely to be a good opening for chair and other furniture stock in knock-down condition.



DEPENDABILITY is not the result of honesty alone. Honesty and knowledge are both required. Similarly, strictly clean dealing by a corporation is not necessarily guaranteed because the members of the corporation may be considered honest in their personal dealings. Corporation dependability, then, is more the result of a matter of fact business policy.

So with this concern. It was launched a generation ago with the belief that it pays to hold one's trade by square dealing. During this generation of progress that policy has never been altered in any particular.

That period has been marked by constant study, looking toward perfection of methods and equipment, i. e., toward development of knowledge of the business.

The result is that we know how to properly handle lumber production and sales, and can be depended upon to give the buyer the benefit of that knowledge.

70,000,000 feet a year of Hardwood Production



ANDERSON-TULLY CO.

MEMPHIS

TENNESSEE

Newsy Jottings of Interest

The capital stock of the Brantford Carriage Company, Limited, has been increased from \$200,000 to \$500,000 by the creation of 3,000 new shares.

Buller & Brebner, of Holstein, Ont., are contemplating installing equipment for a broom and handle factory. The equipment will be electrically driven.

The Canadian Handle Company, Strathroy, Ont., are in the market for prices at once on a quantity of white ash, hickory, hard and soft maple, rock and soft elm.

Mrs. Gourlay, wife of R. S. Gourlay, President of Gourlay, Winter & Leeming, piano manufacturers, Toronto, passed away recently while on a visit to Philadelphia. She is survived by her husband and five children.

The foundation is going in for a mill and handle factory at a cost of \$4,000 to replace the one recently destroyed by fire, which belonged to L. B. Nicholson, Holstein, Ont. The new building will be two storeys, 30 x 100.

The H. E. Furniture Co., of Milverton, to enable them to better supply the wants of their Western customers, intend carrying a stock in Winnipeg. Mr. D. McIntyre, of Winnipeg, will look after their interests there.

John Carlyle, who for many years conducted business as a manufacturer of furniture and showcases at 53 Hayter St., Toronto, died recently. Mr. Carlyle was a native of Scotland, but had lived in Toronto over half a century.

The office and some stock in the joinery room of the sash and door factory of H. Mathieu & Company, Clarke St., Montreal, were destroyed by fire on January 9th. The damage was about \$5,000. The company are rebuilding.

The Arnprior Cabinet Company, Arnprior, Ont., state that the matter of building an addition to their factory has been in abeyance for some time, but the details are being completed and it is probable that work will go on this summer.

The Canadian Wood Products, Ltd., 1000 Gerrard Street East, Toronto, will build a factory at Pape Ave. and G.T.R., at a cost of \$45,000. The building will be two storeys, concrete and brick construction, electric lighting and steam heating.

The B. C. Stave and Heading Co., Ltd., has been incorporated with head office at Vancouver, B.C., and capital stock of \$25,000, to carry on business as coopers and manufacturers of barrels, kegs, casks, tubs, vats, tanks, buckets, pails, staves, veneer, headings, etc.

The Kentville property of the Nova Scotia Carriage Company, Amherst, N.S., was sold recently to J. W. McKay for \$2,185. The real estate and machinery at Amherst, after some spirited bidding, was knocked down to the Prudential Trust Company, for \$53,000.

The Toronto Wood Turning Company, 112 Adelaide St. West, Toronto, are making additions to their factory, at a cost of \$1,000. The alterations will consist of one storey, 40 x 25, brick construction, electric lighting, tar and gravel roofing and hardwood floors.

At the meeting of the shareholders of the Markdale Furniture Co., Markdale, Ont., held recently, it was unanimously agreed to accept an offer of purchase from W. G. Lee, who contemplates manufacturing another line of goods. The factory is being taken over immediately.

Charles Rogers & Company, Toronto, have received from

the United States, a replica of the Spanish Umbra chair, and intend to make a few of them. The style of chair was originated by the great Italian artist, Raphael. The design spread from Italy into Spain, taking its name from the latter country.

Jas. W. Hackett, who was a pioneer sawmill owner and business man and was also interested in woodworking operations, died recently at his home in Vancouver, B.C., at the age of 72 years. He was born in Truro, N.S., and going west located in Winnipeg. He left that city in 1888 to reside in Vancouver.

At a meeting of the manufacturers of refrigerators recently held in Toronto, they unanimously decided to affiliate with the Furniture Manufacturers' Association as a sub-section. Steps had already been taken to secure tabulated information with a view to effecting economies in the production of refrigerators.

The Victoriaville Furniture Co., Ltd., has been incorporated with capital stock of \$99,000, and head office at Victoriaville, P.Q. The powers of the company include manufacturing and dealing in household furniture and all other wooden articles. Among those interested are P. Tourigny, A. Bourbeau, J. E. Alain, W. Laliberte and P. Marchand, all of Victoriaville.

The Canadian Avro Company, Limited, has been incorporated with a capital stock of \$2,500,000, and head office at St. John, N.B., to carry on the manufacture of aeroplanes, air balloons, dirigible air ships, hydroplanes and accessories. The president of the company is Stanley E. Elkin, vice-president E. A. Schofield, secretary J. R. Miller, treasurer Major S. S. Wetmore, and general manager, Capt. B. M. Hay.

Prince Albert is considered to be a very suitable location on account of its proximity to the sources of lumber supply, for a new industry which is being promoted in Saskatchewan. It is proposed to establish a toy factory to be operated on a conservative basis for the benefit of partially disabled soldiers. The details are now being arranged with F. M. Riches, head of the Department of Soldiers Civil Re-establishment in Saskatchewan.

Sir Jos. Flavell, chairman of the Imperial Munitions Board, Ottawa, recently offered to give the city 134,000 shell boxes. The cost of these boxes was about \$110,000, and they will be used in the civic fuel yard, thus meeting the shortage of mill wood which recently existed in that city. The boxes were built of hard and soft wood and the war being over the Imperial Munitions Board have no immediately available use for them.

M. E. Casey, who has been for ten years the sales agent in the Montreal district of the P. B. Yates Machine Co., of Hamilton, Ont., and Beloit, Wis., will in future represent the company in Eastern Ontario, Quebec, Maritime Provinces, and Newfoundland, doing business in his own name at 263 St. James Street, Montreal. Mr. Casey will also represent other Canadian and United States manufacturers in iron and woodworking and supplies.

The woodworking industry of Canada will be well represented at the International Fair at Lyons, France, to be held in March next. The firms exhibiting are:—Georgian Bay Shook Mills, Ltd., Midland, Ont.; North American Bent Chair Co., Owen Sound, Ont.; Goderich Organ Co., Toronto; Amherst Pianos, Limited, Amherst, N.S.; Wm. Cane & Sons

Here !

Figure it out for yourself



Our investigations, conducted over a considerable period, show that on the average each employee loses at least 2 minutes both going in and coming out of the plant. This happens four times each day. "Well," you say, "that doesn't amount to much." But wait a minute, let's see just what that 2 minutes lost time means. Suppose you have 100 employees; each employee loses 8 minutes per day or in all 80 hours per week of actual working time. Figure this at an average of 40c per hour, \$32.00 per week, isn't it, or the tidy little sum of \$1,664.00 per year.

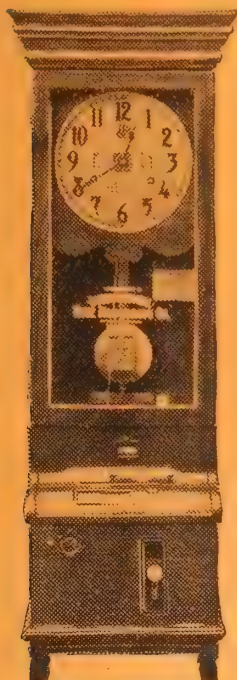
Does this illustration apply to your factory? It does if you are keeping your time sheets by the old-fashioned method.

You can stop this and save enough to purchase one of the many types of

International Time Recorders

that is suitable for your factory in less than six months.

Here are a few reasons why International Time Recorders are used in the largest industrial plants in the world and used successfully.



- they increase the efficiency of every workman, and every department.
- they create confidence between employees and management.
- they reduce clerical work in your payroll and cost departments.
- they cut out manual methods of payroll cost keeping.
- the employees make their own records in their own time.
- closer supervision is possible.
- payroll disputes are cut out.
- discipline is promoted.
- they save money.

If you'll give us an opportunity, we will prove that our statements are not only true, but that we have underestimated them.

International Business Machines Co., LIMITED

Time Recorder Division

FRANK E. MUTTON, Vice-President and General Manager
Royce and Campbell Avenues, Toronto

Also Makers of Dayton Automatic Scales and Hollerith Electric Tabulators

Co., Newmarket, Ont.; W. H. White, Montreal; and Carriage Factories, Limited, Toronto.

A federal charter has been granted the Standard Cabinet Company, Limited, with a capital stock of \$95,000, and head office in Montreal. The company is authorized to purchase, lease, sell and deal in timber limits and to operate, develop and manufacture house fittings, toys, woodenware, gramophones, musical instruments, etc., as well as pulpwood, lumber and timber. Among the incorporators are Robert S. Weir, K.C., and Frank G. Dort, of Montreal.

The Minister of Labor, Ottawa, has established a Board of Conciliation to investigate the dispute between the various furniture makers of Stratford, Ont., and their employees working as carpenters. This dispute does not fall within the scope of the Industrial Disputes Act, but the employers, having concurred with the employees in their application for a board, the Minister is able to establish one. J. F. Marsh, of Niagara Falls, will represent the employees on the board, and Joseph Orr, of Stratford, the employers.

Major J. E. L. Streight, Islington, Ont., has purchased new premises opposite his present site and has commenced putting in switches and unloading stocks there. It is his intention in the near future to erect a two-storey, up-to-date brick factory, 80 x 120 feet. The office building, wagon and lumber sheds, stables and garage will be built first and the work will start as early in the spring as possible, after which construction will be proceeded with on the planing mill. Major Streight has been in the retail lumber and fuel business at Islington for many years and has built up a wide connection.

In the recent civic elections a number of prominent furniture manufacturers were sent over the top by their respective friends and supporters. James Malcolm, of the Andrew Malcolm Furniture Co., was elected Mayor of Kincardine, Ont. C. M. Bell, of the Bell Furniture Co., was the successful Mayoralty aspirant in Southampton. F. E. Coombe, of the F. E. Coombe Furniture Co., Kincardine, Ont., was re-elected Reeve. J. J. Mason, of the Globe Wernicke Co., was given a seat on the public utilities commission for Stratford. Jno. G. Hay, of the North American Bent Chair Co., is the new Deputy Reeve for Owen Sound, and J. A. Cole, of the Jno. C. Mundell Co., Elora, Ont., was chosen as a councillor for that town.

Wood Preservers in Conference

The 15th annual meeting of the American Wood Preservers' Association will be held at the Hotel Statler in St. Louis, Mo., on Tuesday and Wednesday, January 28th and 29th. An interesting programme has been prepared. A. R. Joyce is acting president of the association and F. J. Angier is secretary-treasurer. It is earnestly requested that there be a large attendance as the 1919 convention will be given over to consideration of new projects which have been brought about in the wood preserving industry owing to the war. The strife in Europe disorganized ocean shipping to such an extent that the supply of creosote was curtailed and this forced the substitution of other preservatives. Uniform specifications and centralized purchasing of cross-ties made necessary radical readjustments in the industry. These are the problems which have to be faced and the association hopes that everyone, whether connected with a railway or a commercial treating plant or, in any way, engaged in the production of preservatives, ties or lumber will make it a point to be present and contribute their ideas as well as receive the benefits of others. Not only will several interesting and instructive committee reports

be presented, but timely and helpful papers will be read on the creosote oil situation, the zinc chloride situation, the development of uniform practices in procuring and preserving cross-ties, etc.

Furniture Makers' Relation to Wood

William E. Litchfield, a leading lumberman and manufacturer of Boston, in addressing the members of a Furniture Manufacturing Bureau, emphasized the value of intimate relations between lumber dealers and ultimate consumers. He strongly urged the extensive use for case and cabinet work of the cheaper hardwoods, such as beech, birch, gumwood and elm, etc., in view of the prevailing high prices of oak, walnut, mahogany, etc., noting that many dealers are already achieving noteworthy results by their use. He told of the methods of treating and handling these in this form of work.

Regarding prices for hardwoods in the future, Mr. Litchfield said he believed there would be no great drop in values on most of the principal commodities till supply and demand became the settled guiding factors. He said he looked for no early decrease in hardwood prices and he thought there was no reason why furniture dealers should not buy now, rather than wait for a drop that he felt would not come for a long time.

Canadian SKF Open Montreal Sales Office

The Canadian SKF Company, of Toronto, have just opened a sales office at 412 St. James St. W., Montreal, Que., under the direction of Mr. Geo. F. Sheppard, where they will carry a large stock of SKF Double Row Self-aligning Ball Bearings, Single Row Ball Bearings, Automatic Drill Chucks, Ball Bearing Hangers and Pillow Blocks, "Quality" Steel Balls.

It is intended to give the Eastern users the best service possible in the matter of shipments and also to extend the SKF Engineering Service for ball bearings, designs and applications. SKF products are sold on an engineering basis by engineers, the first consideration being to recommend the correct bearing and method of application for the work submitted.

The growth of the SKF Companies has been remarkable. Commencing in 1907 in Sweden, with an initial staff of twenty people, it now comprises a plant employing 16,000 persons, controlling three mines, where the special grade of ore for this product is mined. Plants are also established in France, Luton, England, Hartford, Conn., Philadelphia, Pa.

Hardwood Lumber

- 10 cars—2¼ and 2½ in. Bending Oak.
- 12 cars—1 in. FAS. Red and White Oak.
- 7 cars—1 in. No. 1 Com. Red and White Oak.
- 6 cars—1 in. No. 1 Com. & Btr. Qtd. W. Oak.
- 4 cars—1 in. Log Run Basswood.
- 2 cars—2½ in. No. 1 Com. & Btr. Dry Hard Maple.
- 3 cars—4 in. No. 1 Com. & Btr. Green Hard Maple.

We Have Quite a Complete Stock of Plain and Quartered Red and Sap Gum—Send Us Your Enquiries

THE E. & W. LUMBER CO.

South Bend, Indiana

What's the Price ?

Every buyer asks the question—some base their **Purchase** entirely on the answer—Others attach less importance to **Price** but demand **Quality**.

Factory costs are governed more by the **waste** of material than cost of labor. **Waste** in your **lumber cutting** depends largely on the **Lumber Buyer**.

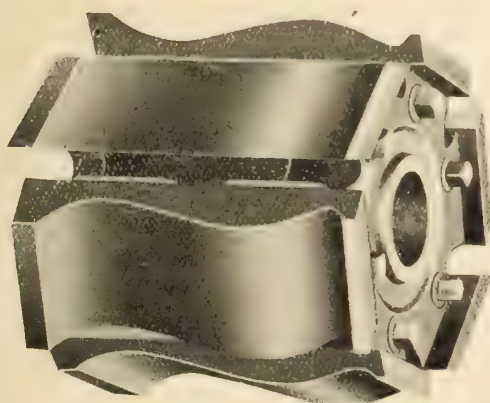
Our Price not always lowest—
"Quality Guaranteed."



The
KORN-CONKLING Co.
MEMPHIS, TENN.

The Diehl Adjustable Cutter Head

For Jointers, Shapers and stickers



**National Sweeper Company Has Used Diehl
Cutter Heads for Over Six Years**
—Still Using Them

All of their moulding machines and two of their shapers are equipped with Diehl Cutter Heads. They say: "We have previously used numerous styles of heads and knives, but have found your adjustable head the most satisfactory of any."

The G. M. Diehl Machine Works
Wabash, Indiana

"WELL BOUGHT IS HALF SOLD"

To Hardwood Users we offer

5 M' 1 x 9 in. No. 2 and 3 Com. Birch.
16 M' 1 x 4 and up No. 2 Com. and Btr. Birch.
39 M' 1 x 4 and up No. 3 Com. and Btr. Birch.
3 M' 3 in. Birch Hearts.
6 M' 4 in. Birch Hearts.
12 M' 2½ in. No. 1 Com. and Btr. Birch.
10 M' 4 in. No. 1 Com. and Btr. Birch.
2 cars 6/4 x 4 and up No. 2 Com. and Btr. Bass-wood.
1 car 2 x 4 and up No. 1 Com. and Btr. Soft Elm.
1 car 3 x 6 and up No. 1 Com. and Btr. Soft Elm.
2 cars 3 in. No. 1 Com. and Btr. Hard Maple.
1 car 4 in. No. 1 Com. and Btr. Hard Maple.
1 car 1 x 4 and up No. 2 Com. and Btr. Beech.
1 car 6/4 x 4 and up No. 1 Com. and Btr. Beech.

All dry and first class. Send your enquiries.

**We should like to quote you on
any of the above**

**Canadian General Lumber
Company, Limited**

712 Bank of Hamilton Bldg.
TORONTO

MONTREAL OFFICE: 203 McGill Bldg.

Selling
Graves, Bigwood & Co.'s
Lumber, Lath and Box Shooks

FOR SALE**HARDWOOD SMALL DIMENSION**

- 1 Car Hickory, 1" x 3" to 12", S2S.
 1 Car 7/8" Hickory dowels, 12" to 44" long.
 1 Car 1"x1" Hickory squares, 12" to 44" long.
 1/2 Car White Oak, 1/2"x2 1/8"x11" to 16", kiln dried, S2S.

Will quote very low prices to move promptly.

1 G. ELIAS & BRO., Inc., Buffalo, N.Y.

FOR SALE

Connell & Dengler 32 in. 2 color Box Pointer.
 Cowan M-209 Box Matcher.
 Berlin Slab Resaw.
 Mereen Slab Resaw.
 Box 46, Canadian Woodworker, Toronto.
 t.f.

For Sale

Dove-Tail Box Machinery (full set)
 Horizontal Band Resaw
 Vertical Band Resaw
 Double Surfacers
 "High Speed" Matcher
 Corliss Engine 18 in. x 36 in.
 Box 35,
 Canadian Woodworker, Toronto.
 t.f.

Machines For Sale

- 1 Single Spindle Reversible Shaper,
 1 Little Giant Pony Planer and Matcher.
 These two machines must be moved within the next week, and are offered at an exceptional bargain. Terms cash.
 Box 26, Canadian Woodworker, Toronto.
 t.f.

Retort For Sale

Patent Perfection live steam retort. Will take lengths from the shortest up to ten feet long. Will steam four times the quantity exhaust steam will and save one-half the breakage. For particulars apply to the

St. Marys Wood Specialty Co., Ltd.,
 St. Marys, Ont.

FOR SALE

Berlin, C.M.C. and Cowan Band Resaws.
 Horizontal Slab, and Hopper Feed Resaws.
 Box Board Squeezer & Matcher (Mereen).
 Dowel Door Machinery (large set).
 Lock Corner and Dovetail Box Sets.
 High Speed Matchers, Berlin and American.
 Buzz Planers, and Surfacers.
 Sanders, 2 and 3-Drum, and Belt.
 American Timber Sizer.
 Veneer Presses.
 Chain Mortiser, etc.

Write Box 42,
 Canadian Woodworker, Toronto.

WANTED

Second Hand 36 in. or 40 in. Mereen Squeezer, in good condition. Box 44, Canadian Woodworker, Toronto. 1

BIG SNAP**60 inch Triple Drum
"Columbia" Sander**

Only \$1050.00 Winnipeg

Machine in good operating condition. If ordered at once by Eastern buyer we can get into car of other machinery for Montreal customer. Half cash with order, balance on B/L. Wire your order. Only one can get it.

J. L. NEILSON & CO.,
 1 Winnipeg, Man.

Examine Your Scrap Steel

There is hardly a factory in Canada that has not a certain amount of scrap steel in the form of old saws, planer and sticker knives, etc. In these days of high prices and a shortage of steel of all kinds, the suggestion of a clean-up week seems timely, and would more than repay the expense and trouble incurred, says a writer in "Wood Turning."

If you have some old saws, planer knives, lathe cutters or other kindred edged tools piled away going to waste and being eaten up by rust, now is the time to dig them out and get busy at reclaiming them and putting them into service again. There has never been a time in the history of the machine woodworking industry when the need for thorough conservation and utilization of saw and knife steel was more readily apparent than right now. You don't need telling that all sorts of steel is scarce. You have had that fact driven home by news reports, and by prices and shortages when seeking to buy new saws and knives.

What we need right now is more attention to gathering up and reclaiming old saws and knives. Saws that are kinked and crooked can be put in shape again by a filer who has had saw hammering experience, and there is many a cast-off saw that can be reclaimed and made to duty again. The same is true of knives and cutters. Many that you have cast aside in the past will be found mighty useful right now. Those that have suffered from rust can be refaced at the grinder with a little time and patience. And it will not only save you time and money to do these things, but it will help conserve the steel supply for the country.

Let us have a campaign of cleaning up and reclaiming the cast-offs in saws, knives and cutters.

FOR SALE

Battery of "Bowser" Tanks for Finish Room. Good Condition.

t.f. Box 32, Canadian Woodworker

**PETRIE'S
LIST****of NEW and USED
WOOD TOOLS**

FOR IMMEDIATE DELIVERY

Wood Lathes

- 20" Sidney, "Famous."
 16" Canada Machinery Corporation.
 16" Chamberlain, back geared.
 16" Sidney, "Famous."
 14" Sidney, "Famous."
 2" x 36" Cowdry, gauge lathe.

Wood Planers

- 30" Whitney pattern surfacer.
 26" double surfacer.
 24" Champion planer and matcher, moulding attachment.
 24" Galt, planer and matcher.
 24" Hermance, double surfacer.
 24" MacGregor-Gourlay.
 24" Sidney, "Famous," single surfacer.
 16" Galt, pedestal, buzz planer.
 16" Buzz, with slotted head.

Band Saws

- 36" MacGregor-Gourlay, circular, re-saw.
 36" West Side, pedestal.
 30" Ideal, pedestal (4).
 30" Cowan, bracket.
 30" Goldie & McCulloch, bracket.
 27" Sidney, "Famous," pedestal.
 20" Sidney, "Famous," pedestal.

Saw Tables

- No. 2 Famous, variety.
 No. 2 Crescent, boring attachment.
 No. 6 Sidney, "Famous," combination.
 No. 619 C.M.C. dimension.
 Ballantine variable power feed tip.
 MacGregor Gourlay railway cut-off.
 Greenlee automatic cross-cut.
 7' Fay, swing saw.
 Canadian, steel frame, pole saw.
 Vaughan, portable, drag saw.

Mortisers

- Cowan, upright, power.
 Fay, upright, power.
 Galt upright, compound table.
 No. 1 MacGregor-Gourlay upright, power.
 No. 5 New Britain, chain.
 No. 2 Smart, foot power.

Moulders

- 13" Clark Demill four-side.
 12" Cowan four side.
 12" Woods four-side, inside
 10" Houston four side.
 8" Dundas four-side.
 7" Cowan double head.
 6" Cowan four side.
 6" Dundas sash sticker.

Clothespin Machinery

- Humphrey automatic lathes (5)
 Humphrey double slotters (3)

Miscellaneous

- No. 58 Crescent, universal, woodworker.
 No. 30 Famous, universal woodworker.
 Fay, horizontal, boring machine.
 No. 920 C. M. C., post boring machine.
 No. 2 Defiance, belt sander.
 Fay & Egan 12 spindle dovetailer.
 MacGregor Gourlay 12 spindle dovetailer.
 No. 1 Ballantine dowel machine.
 M135 Cowan, sash and door relisher.
 Egan sash and door tenoner.
 Dundas double-head tenon machine.
 20" Superior saw arbors.
 Hall's automatic shingle machine.
 Waterous lath machine.
 26" Dominion lath trimmer.
 6' Linderman, automatic, glue jointer.

Wanted for Cash—Machine Tools,
 such as Planers, Shapers, Boring
 Mills, Millers' Lathes, etc.

H. W. PETRIE, LTD.
 Front St. W., Toronto, Ont.

Perkins Vegetable Glue

No other glue can be like Perkins Glue

The Standard Veneer Glue

Our Patent Process fixes that

Perkins Quality and Perkins Service

give

Uniform, Guaranteed, Satisfactory Glue

Process and Product Patents covering Perkins Glue were granted July 2nd and March 19th, 1912, and are held valid and infringed by United States Circuit Court of Appeals. Corresponding Canadian Letters Patent were granted July 9th, 1912.

The only Guarantee required by our customers is the

NAME and REPUTATION of
PERKINS GLUE COMPANY

Factory and General Offices:
Lansdale, Pennsylvania

Sales Office:
South Bend, Indiana

We have the best facilities for the
Manufacture of
**SPRING MATTRESS and
CAMP COT FRAMES**

also **DIMENSION STOCK**
in Maple, Beech and Birch

Write for prices.

John P. Newman Sons'
WIARTON, ONT.

**Wire, Wire Bale Ties
and Wire Products**

Bale ties, Heading ties, Lath ties, Hardwood
Flooring ties, Wire Nails, Flat Steel or Wire
Barrel hoops. All sizes of Fine wire in Bright,
Tinned or Galvanized, manufactured to order.

Laidlaw Bale-Tie Co., Ltd.

A. T. Diggins, Toronto, Ont. H. E. O. Bull, Montreal, Que.
Harry F. Moulden & Sons, Winnipeg, Man.

Head Office and Works: **Hamilton, Canada**

You Have Paid for an
Installation of
**Chapman
Double Ball Bearings**

in Your Factory over and
over again, BUT—

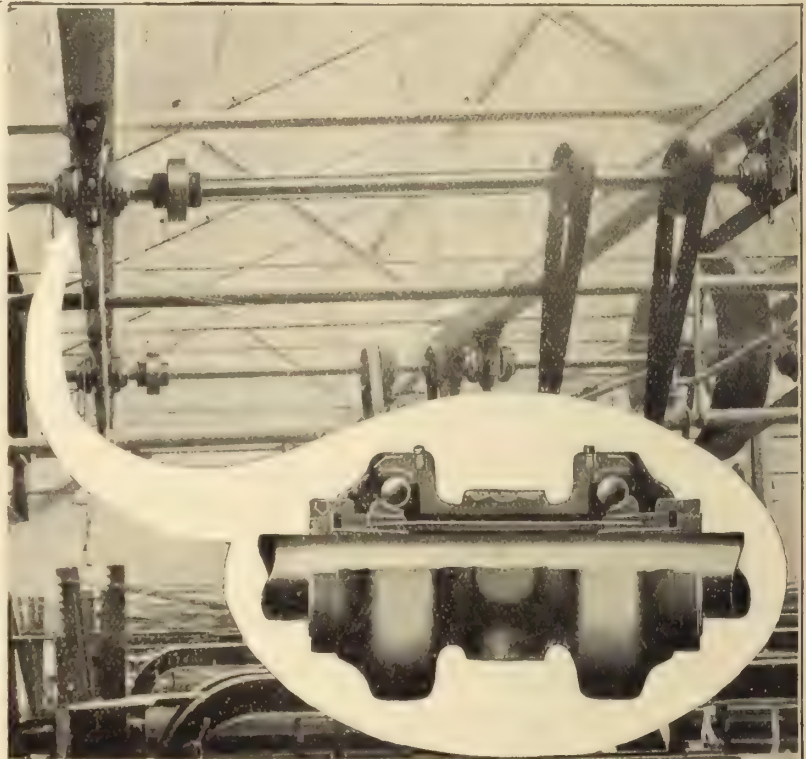
HAVE YOU GOT THEM?

Ordinary line shafting wastes 15 per
cent. to 60 per cent. of power.

Line shafting equipped with Chapman
Double Ball Bearings will eliminate
about 75 per cent. of the friction, thus
averaging a total saving of from 15
per cent. to 30 per cent.

Chapman Double Ball Bearings fit any
adjustable hanger and require oiling
and attention only once a year. No
extra equipment required to install.

Write to-day for full particulars



The Chapman Double Ball Bearing Co. of Canada, Limited

Toronto

339-351 Sorauren Ave.

Ontario

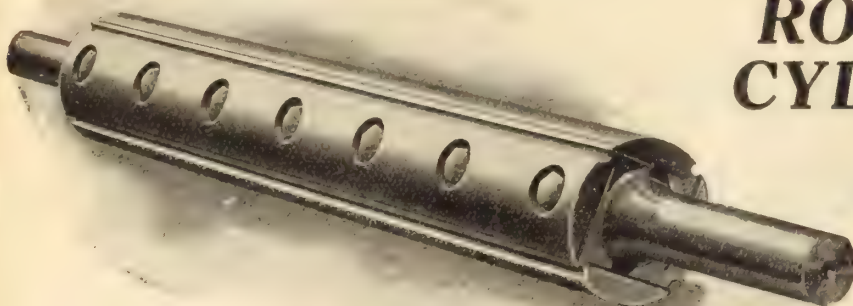
American Branch: The Transmission Ball Bearing Co., Inc., 32 Wells St., Buffalo, N.Y.

**PATENTED
ROUND SAFETY
CYLINDER HEAD**

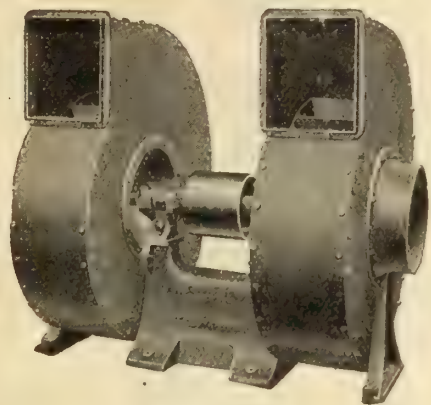
Two and four-knife heads for
jointers. Round heads for moulders,
top, bottom and side heads. Six-
knife heads for flooring and surfac-
ing machines. Write for particulars.

Tawney Machine Co.

WILLIAMSPORT, PA.



We are also dealers in new and
rebuilt Woodworking Machinery.



CANADIAN

Slow Speed Fans are designed and built right.

They will save from 15 to 25 per cent. on your power costs.

Write for a catalog

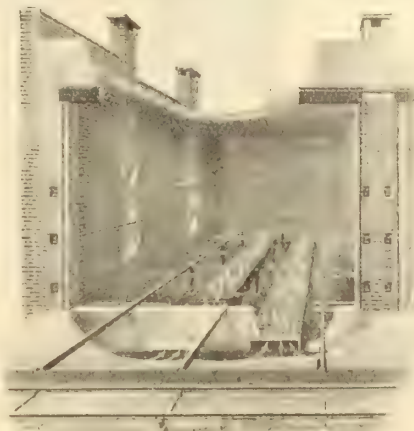
**Canadian Blower & Forge
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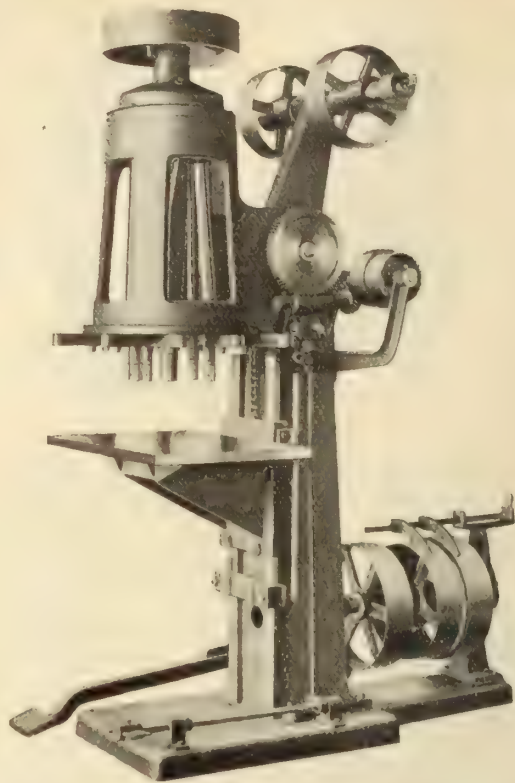
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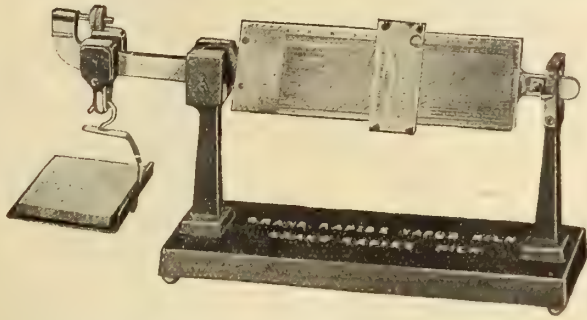
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Requires no figuring or computations.
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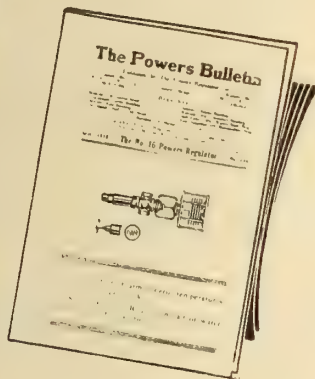
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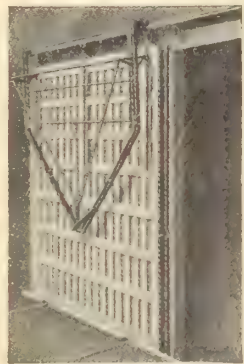
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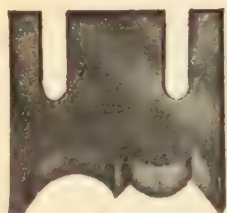
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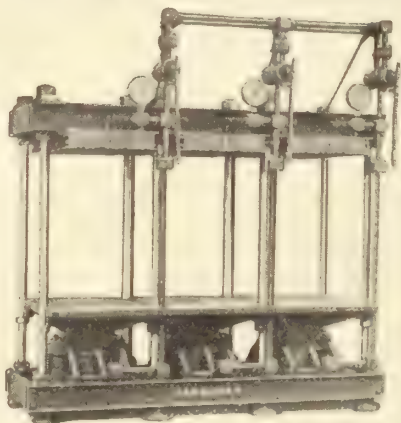
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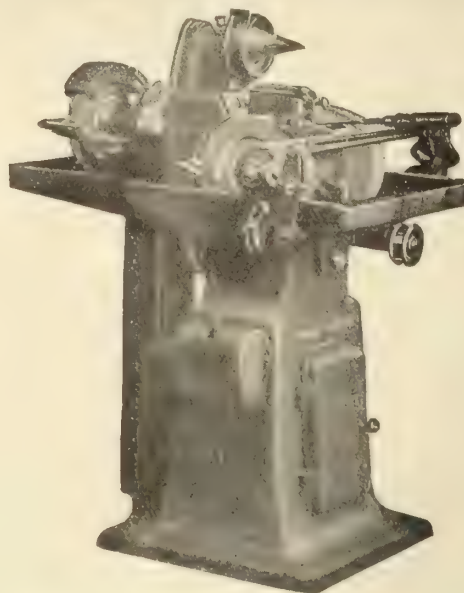
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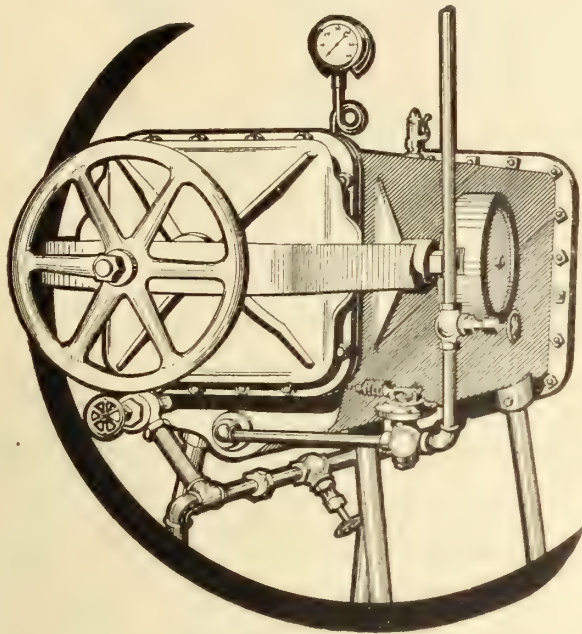
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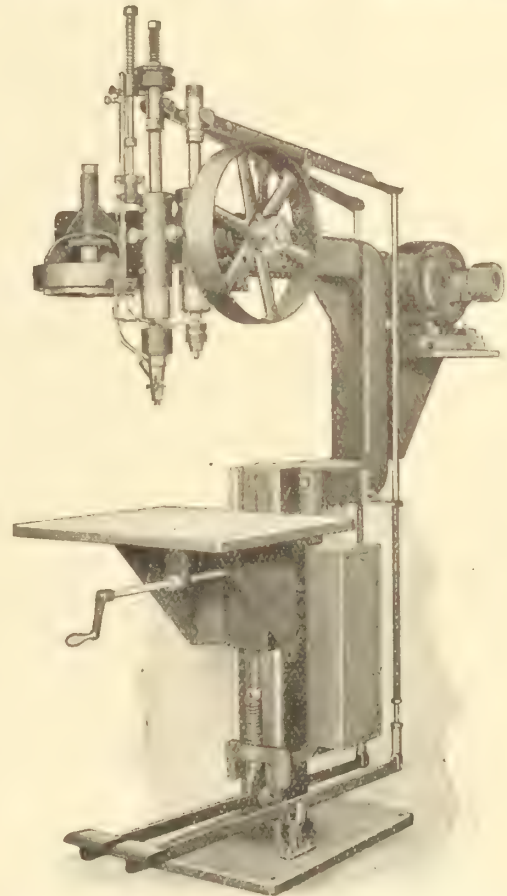
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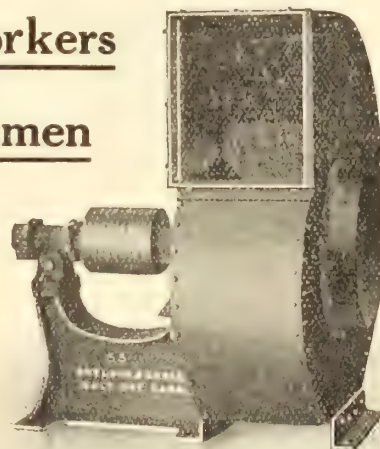
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themselves
to the ser-
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Mill or
Wood-
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Messrs. Robt. Hamilton & Co., Ltd., Bk. of Ottawa Bldg, Vancouver, B.C.

"Canadian Woodworker" Buyers' Directory—Continued

GLUE SPREADERS

Dauber-Bell Machine Co., Oshkosh, Wis.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GLUE ROOM EQUIPMENT

Dauber-Bell Machine Co., Oshkosh, Wis.
Perrin & Company, W. R., Toronto, Ont.

GRINDERS (Cutter)

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.

GRINDERS (Knife)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GROOVING HEADS

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.

GUARDS

Cowan & Company, Galt, Ont.

GUM LUMBER

Aberdeen Lumber Co., Pittsburg, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
Anderson-Tully Co., Memphis, Tenn.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Brown & Co., George C., Memphis, Tenn.
Churchill-Milton Lumber Co., Louisville, Ky.
Cornelius Lumber Co., St. Louis, Mo.
Gum Lumber Association, Memphis, Tenn.
Heyser Lumber Co., W. E., Cincinnati, Ohio.
Holly Ridge Lumber Co., Louisville, Ky.
Paepcke-Leicht Lumber Co., Chicago, Ill.
Probst Lumber Co., Cincinnati, Ohio.
Thomas & Proetz Lumber Co., St. Louis, Mo.
Wisconsin Lumber Co., Chicago, Ill.

GUMMERS, ETC.

Fay & Egan Co., J. A., Cincinnati, Ohio.

HAND PROTECTORS

Fay & Egan Co., J. A., Cincinnati, Ohio.

HAND SCREWS

Fay & Egan Co., J. A., Cincinnati, Ohio.

HANDLE & SPOKE MACHINERY

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Whitney & Son, Baxter D., Winchendon, Mass.

HARDWARE

Laidlaw Bale-Tie Co., Hamilton, Ont.
Weber, Knapp Co., Jamestown, N.Y.

HARDWOOD LUMBER

Aberdeen Lumber Co., Pittsburg, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
American Oak Mfrs.' Assn., Memphis, Tenn.
American Walnut Association, Washington D.C.
Anderson-Tully Co., Memphis, Tenn.
Atlantic Lumber Company, Toronto, Ont.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bonner & Sons, J. H., Memphis, Tenn.
Brown & Company, Geo. C., Memphis, Tenn.
Burns & Knapp Lumber Co., Conneautville, Pa.
Bury & Company, Robert, Toronto, Ont.
Cornelius Lumber Co., St. Louis, Mo.
Canadian General Lumber Co., Toronto, Ont.
Churchill-Milton Lumber Co., Louisville, Ky.
Elgie & Jarvis Lumber Co., Toronto, Ont.
Hart & McDonagh, Toronto, Ont.
Heyser Lumber Co., W. E., Cincinnati, Ohio.
Holly Ridge Lumber Co., Louisville, Ky.
Kersley, Geo., Montreal, Que.
Korn-Conkling Co., Cincinnati, Ohio.
Long-Knight Mfg. Co., Indianapolis, Ind.

McLennan Lumber Co., Montreal, Que.
Paepcke Leicht Lumber Co., Chicago, Ill.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City.
Percy E. Heeney, Kitchener, Ont.
Pickrel Walnut Co., St. Louis, Mo.
Probst Lumber Co., Cincinnati, Ohio.
Spencer, C. A., Montreal, Que.
Wisconsin Lumber Co., Chicago, Ill.

HUB MACHINERY

Fay & Egan Co., J. A., Cincinnati, Ohio.

HYDRAULIC VENEER PRESSES

Perrin & Company, Wm. R., Toronto, Ont.

JOINTERS

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

LAMPS

Canadian Lamp-Philips Co., Toronto.

LATHES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.

MACHINE KNIVES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

METALINE NAILS

Dominion Tack & Nail Co., Galt, Ont.

MITRE MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.

MITRE SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Dauber-Bell Machine Co., Oshkosh, Wis.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

MULTIPLE BORING MACHINES

Root Company, E. M., York, Pa.

MULTIPLE BOXING MACHINES

Fay & Egan Co., J. A., Cincinnati, Ohio.
Nash, J. M., Milwaukee, Wis.

OIL STONE GRINDERS

Mummert-Dixon Co., Hanover, Pa.

PANELS

Hay & Co., Limited, Woodstock, Ont.
Waetjen & Co., George L., Milwaukee, Wis.

PATTERN SHOP MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

PLANERS

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

PLANING MILL MACHINERY

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PRESSES (Veneer)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Co., Wm. R., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

PULLEYS

Fay & Egan Co., J. A., Cincinnati, Ohio.

RESAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RIM AND FELLOE MACHINERY

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.

RIP SAWING MACHINES

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RUBBING MACHINES

DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.
Paasche Air Brush Co., Chicago, Ill.

SAFETY DEVICES

Cowan & Company, Galt, Ont.

SANDERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

Band Resaw 76

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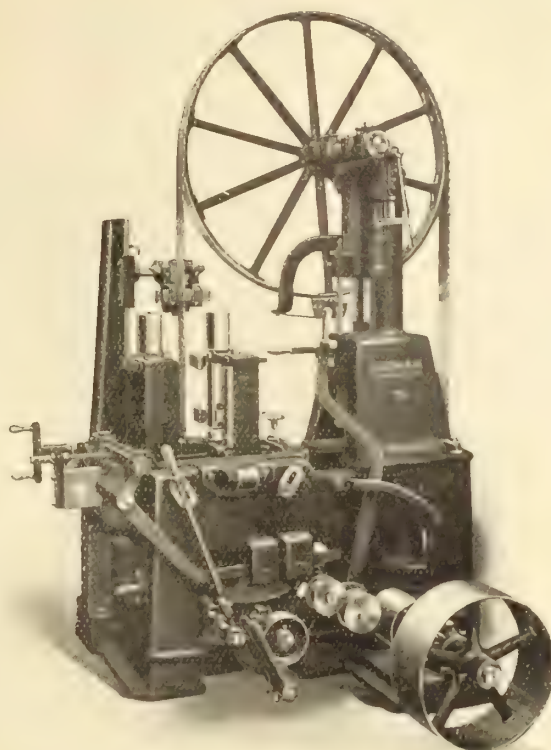
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Tilting Rolls

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26" Vertically.



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all kinds of

Special Circular Saws
for Special work

Cross Cut Saws

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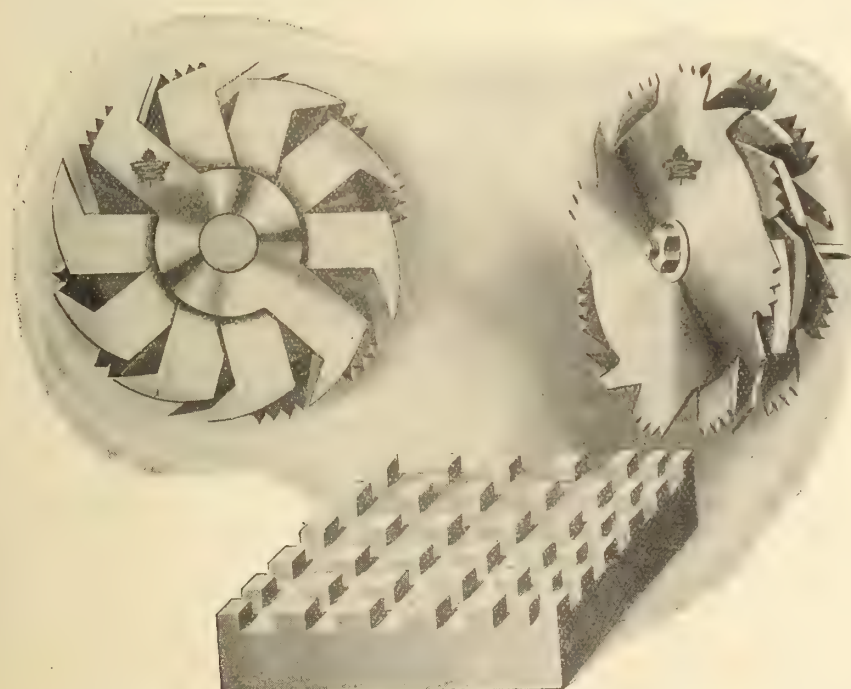
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"Canadian Woodworker" Buyers' Directory—Continued

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Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Dauber-Bell Machine Co., Oshkosh, Wis.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAWS

Atkins & Co., E. C., Indianapolis, Ind.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Company, Toronto, Ont.
Shurly-Dietrich, Ltd., Galt, Ont.
Simonds Canada Saw Co., Montreal, Que.

SAW SWAGES

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.

SAW TABLES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Dauber-Bell Machine Co., Oshkosh, Wis.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SCRAPING MACHINES

Canada Machinery Corporation, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.

SCREW DRIVING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Reynolds Machine Co., Massillon, Ohio.

SCROLL SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SECOND-HAND MACHINERY

Cowan & Company, Galt, Ont.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

SHAPERS

American Woodworking Machinery Company, Rochester, N.Y.
Cowan & Company, Galt, Ont.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS

Canadian Blower & Forge Co., Kitchener, Ont.
Sheldons Limited, Galt, Ont.
Toronto Blower Company, Toronto, Ont.

SHOOK BUNDLER

Neilson & Company, J. L., Winnipeg, Man.

SPRING MATTRESS FRAMES

Newman Sons, J. P., Warton, Ont.

SPRINGS FOR UPHOLSTERY

Weber, Knapp Co., Jamestown, N.Y.

STAINS

Ault & Wiborg, Toronto, Ont.

SINGLE SPINDLE BOXING MACHINES

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.

STAVE SAWING MACHINE

Whitney & Son, Baxter D., Winchendon, Mass.

SURFACERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES

Fay & Egan Co., J. A., Cincinnati, Ohio.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES

Walter & Company, B., Wabash, Ind.

TEMPERATURE REGULATORS

Canadian Powers Regulator Co., Toronto, Ont.

TENONING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRIMMERS

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRUCKS

Sheldons Limited, Galt, Ont.
National Dry Kiln Co., Indianapolis, Ind.

TURNING MACHINES

Cowan & Company, Galt, Ont.
Dauber-Bell Machine Co., Oshkosh, Wis.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

UNDER-CUT SELF-FEEDING FACE PLANER

Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.

UPHOLSTERER'S FLOCK AND BATTING

Bauers Limited, Waterloo, Ont.

VARNISHES

Adams & Elting Co., Chicago and Toronto.

Ault & Wiborg Company, Toronto, Ont.
Jamestown Wood Finishing Co., Jamestown, N.
Penfound Varnish Co., Toronto, Ont.

VARNISH SPRAYERS

DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

VENEERS

Bury & Company, Robert, Toronto, Ont.
Dean Spicker Company, Chicago, Ill.
Empire Veneer Company, Chicago, Ill.
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Geo. Kersley, Montreal, Que.
Korn-Conkling Co., Memphis, Tenn.
Long-Knight Lumber Co., Indianapolis, Ind.
Nartzik, J. J., Chicago, Ill.
Ohio Veneer Company, Cincinnati, Ohio.
Penrod, Jurden & McCowen, Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Roberts & Co., John N., New Albany, Ind.
Toronto Veneer Company, Toronto, Ont.
Wactjen & Co., George L., Milwaukee, Wis.

VENEER TAPE

Ideal Coated Paper Co., Brookfield, Mass.

VENTILATING APPARATUS

Canadian Blower & Forge Co., Kitchener, Ont.
Sheldons Limited, Galt, Ont.

VENEER JOINTERS

Garlock-Walker Machinery Co., Toronto, Ont.

VENEER PRESSES (Hand and Power)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Company, Wm. R., Toronto, Ont.

VICES

Fay & Egan Co., J. A., Cincinnati, Ohio.

WAGON AND CARRIAGE MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

WOOD FINISHES

Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg, Toronto, Ont.
Jamestown Wood Finishing Co., Jamestown, N.J.
Penfound Varnish Co., Toronto, Ont.

WOOD TURNING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Mattison Machine Works, Rockford, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

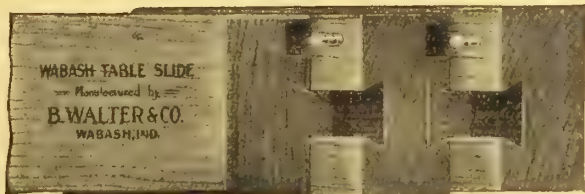
WORK BENCHES

Fay & Egan Co., J. A., Cincinnati, Ohio.

WOODWORKING MACHINES

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Dauber-Bell Machine Co., Oshkosh, Wis.
Elliot Woodworker Limited, Toronto, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

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*If the Slide Does Not Work Properly
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**Wabash Slides insure
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SLIDE MAKING is a SPECIALTY BUSINESS

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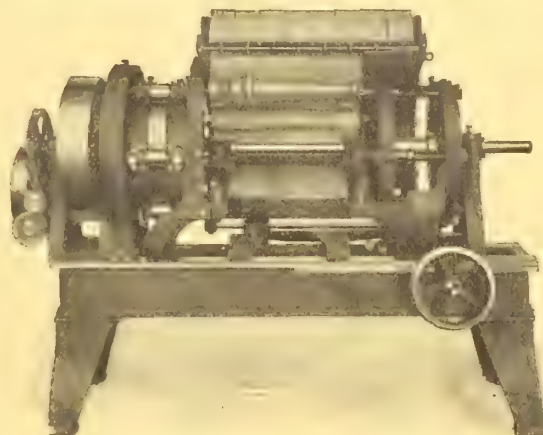
B. Walter & Company

Edsall St., Wabash, Ind.

Canadian Representative:

A. B. CAYA, 28 King St. East, Kitchener, Ont.

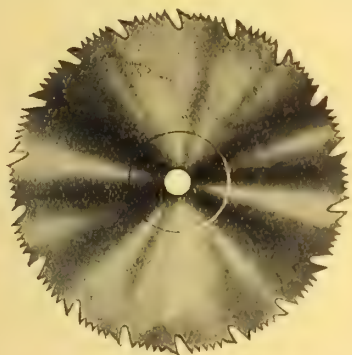
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the improvement in product and reduction in cost which you might effect by installing a **Nash Automatic Sander** for your chair and furniture turnings?

Let me tell you of the experience of other manufacturers who have the Sander in use.

J. M. NASH, Milwaukee, Wis.



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STERLING QUALITY

SAWS and KNIVES

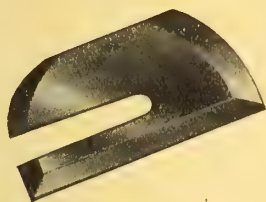
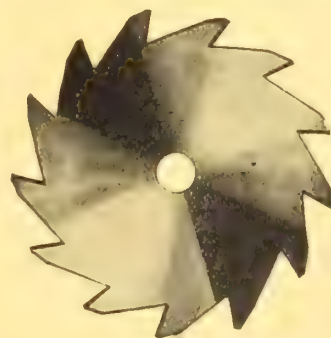
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Atkins Sterling Quality Saws and Knives are proving their superiority by competitive tests in the largest plants of the country. We welcome your most careful investigation, as we know the satisfaction that will result.

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Get Ready for Your Full Share of "Peace Business"



*There
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Shaping Lathe
Like the Mattison*

*As Operated
in Factory of
Empire Chair Co.
Elizabethton, Tenn.*

For Quality Turnings, Install a Mattison Lathe

WITH the coming of Peace there will be hundreds of thousands of new homes to furnish. What wonderful opportunities for progressive furniture men properly equipped to produce articles of merit at a reasonable price. In today's furniture styles, turnings are the big item of manufacture—turnings that are distinctive in design, perfectly shaped and produced at a minimum labor cost.

The Mattison Automatic, the Standard Shaping Lathe, will give you just such turnings.

ITS range covers all classes of turned work—round, square, octagonal—from delicate spindles to bed posts or table pedestals.

Its simplicity enables an ordinary mechanic to operate it, and it is practical for even the smaller factories, because it is economical on lots of a few turnings.

Our experience in serving others makes us confident we can serve you, too. We guarantee satisfaction. Why not give us a chance?

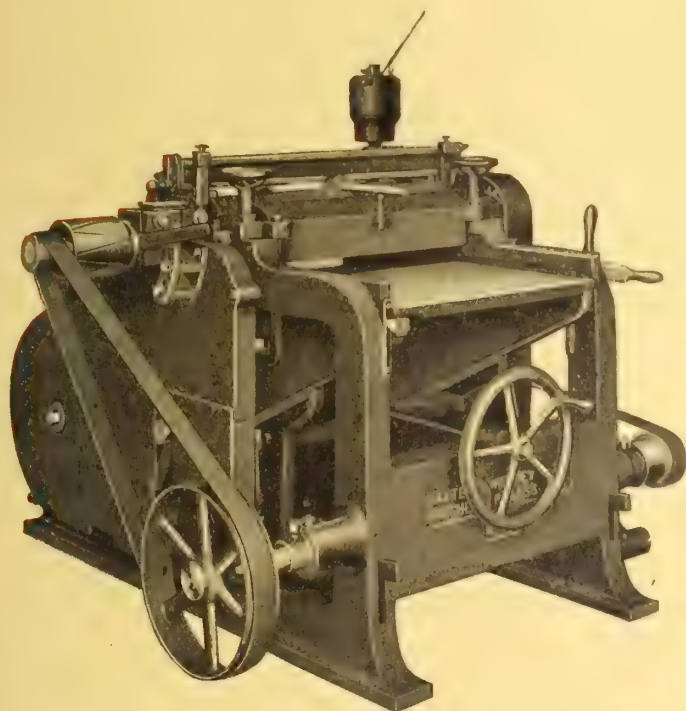
Mattison Machine Works, Rockford, Ill., U.S.A.

CANADIAN WOODWORKER

and
Furniture Manufacturer

THE WHITNEY Improved Single Planer

has special features that appeal to every woodworker, such as the



30" No 32 Single Planer—Round Head Cutter and Motor Grinder

RIGID FRAME with ample weight of metal.
BED raised and lowered on Solid Wedges operated on wide tracks.

HARDENED CENTRE TABLE made extra thick.

AUTOMATIC CHIPBREAKER working concentric with the cutter head.

SIDE CLAMP CUTTER HEAD BOXES easily detached.

CUTTER HEAD with long bearings of large diameter.

REMOVABLE BABBITTED FEED SHAFT BOXES.

SECTIONAL FEED ROLLS to handle narrow and uneven stock.

MACHINE CUT GEARS.

These are but a few of the features that enable the Whitney Planer to do superior surfacing at the lowest cost.

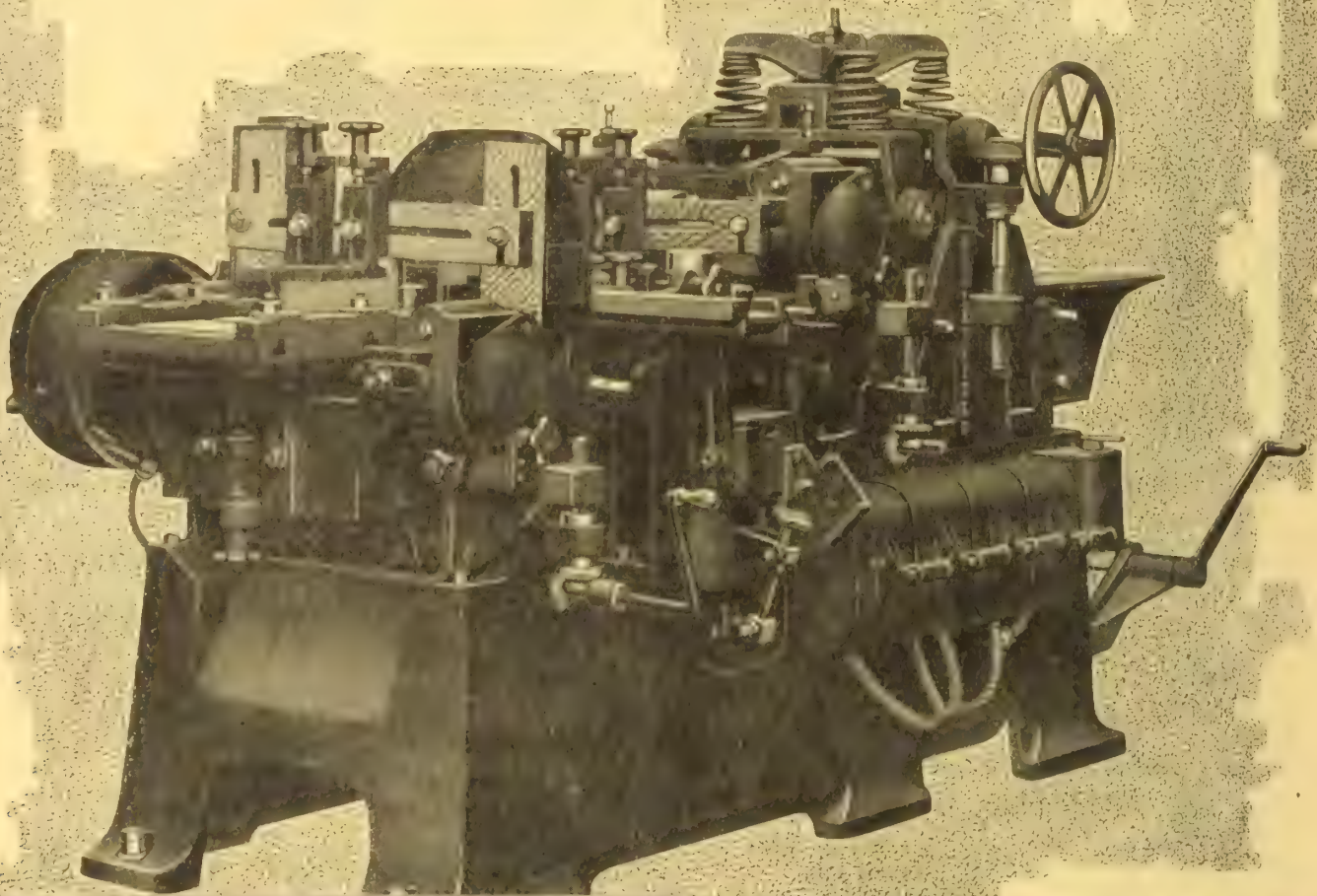
These machines can be furnished with two or four-knife Square Cutter Heads or four-knife Round Cutter Heads, Flexible or Sectional Chip-breaker and Motor-driven Grinders and Devices.

Write us for further information about this machine.

BAXTER D. WHITNEY & SON, Winchendon, Mass.

H. W. Petrie, Ltd., Toronto, Ontario, Agents for Ontario

The
PATENTED
EAGLEFIELD
MOULDER
COMPLETELY MOTOR DRIVEN



"Completely Motor Driven"

You cannot possibly appreciate the value of this statement, unless you realize that the motors are especially designed for moulder purposes. The usual practice of adopting standard motors to a standard machine has been abandoned.

Five years of experimenting and investigating for the development of these motors has produced many other advantages in the moulder design. The result is, a moulder without comparison in respect to economy, safety, speed and quality of work produced.

We shall appreciate the opportunity of proving these claims to you.

**VONNEGUT
MACHINERY
COMPANY**

INDIANAPOLIS, IND., U.S.A.

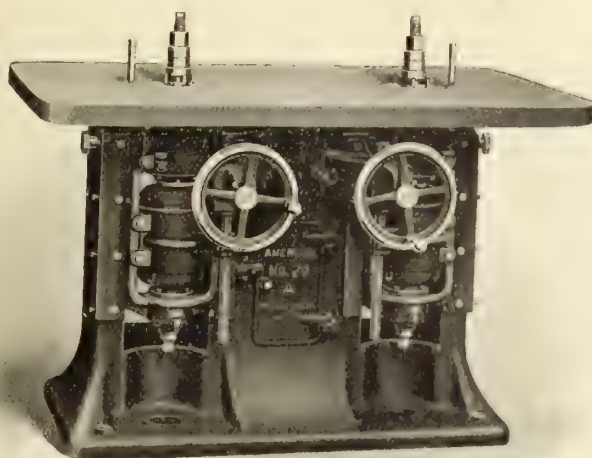
AMERICAN WOOD WORKING MACHINERY CO.

ROCHESTER, N. Y.

SALES OFFICE FOR BRITISH COLUMBIA, PORTLAND OREGON
 AGENTS FOR THE REST OF CANADA GARLOCK-WALKER MACHINERY CO., TORONTO
 AGENTS FOR GREAT BRITAIN THE PROJECTILE CO., LONDON

FIRST IN QUALITY

American Motor Driven Woodworking Machines



The American New Motor Spindle Shaper is the latest machine in the shaper line offered to the woodworking trade.

The absence of countershafts, the saving of floor space, the elimination of belts, flexibility of operation and economy of power and op-

erating expense are all in favor of this machine.

Catalog Announcement

In a short time our New Catalog will be ready for distribution. This is the 12th Edition. The 11th Edition of this Catalog was taken so quickly that we didn't anticipate the New Edition soon enough. Get your name in early for a copy of the 12th Edition.

COUPON

Garlock Walker Machinery Co.
Toronto, Canada

Please send us a copy of the New American 12th Edition Catalog. We are in the market for the following machines:—

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Signed

Town Province

CANADIAN



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Garlock-Walker Machinery Company

Limited

32 Front Street West, TORONTO, ONT.

Toronto

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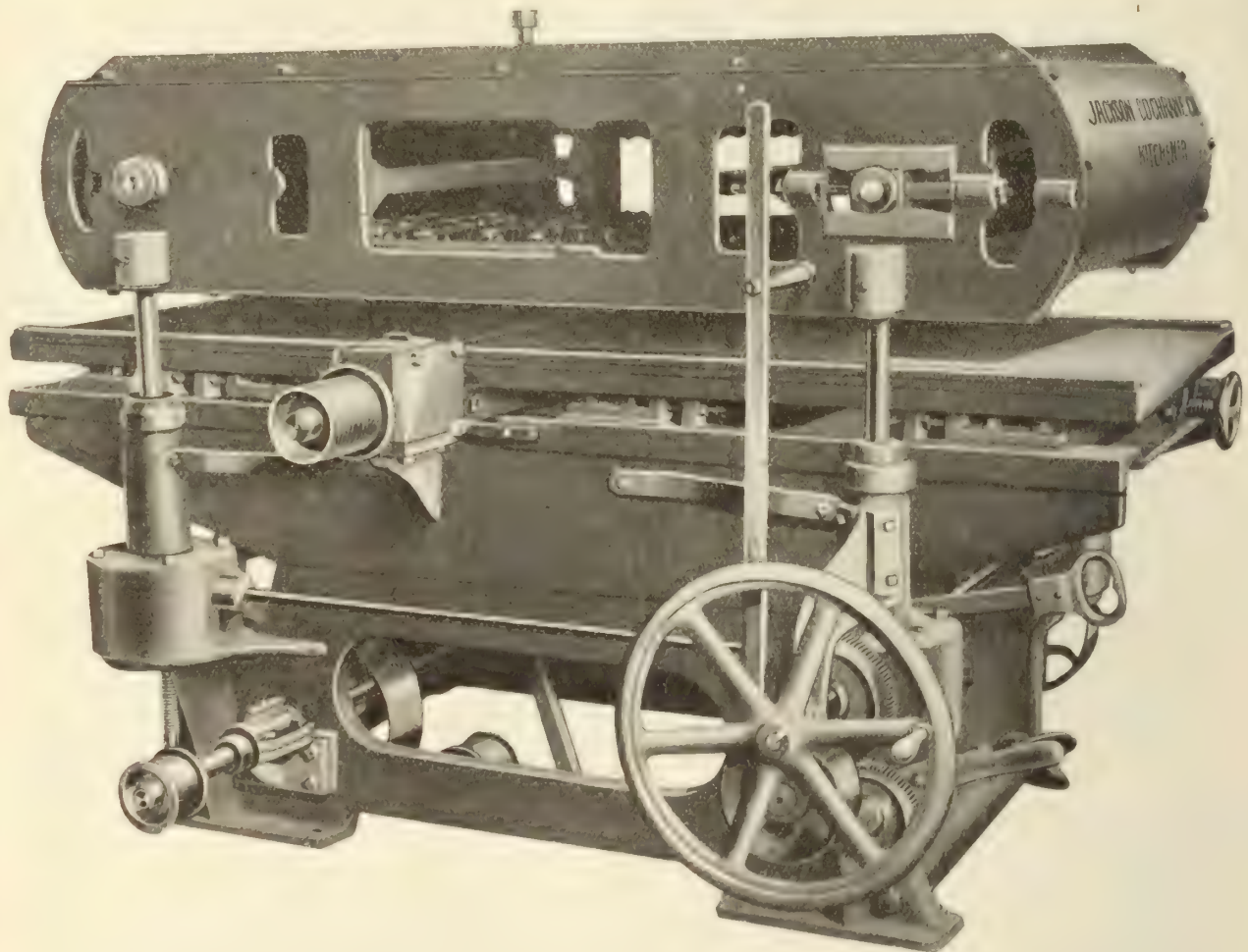
The Herzog Self-Feed Jointer

means

Increased Production
Small Floor Space

Simplicity of Operation
Safety to Employees

Does Four Times the Work of the Hand Jointer



Our No. 34 Herzog Jointer, illustrated above, is one of the most efficient machines on the market to-day. It is appreciated by the manufacturer and employees alike, because, while it will produce from three to five times as much work as the hand jointer, it does not require skilled operators, but eliminates the danger so common to other makes. It can be operated by two boys. It will handle stock varying in width from 1 inch to the full width of the jointer, will feed fast or slow, takes only one-fourth the floor space of hand jointers, and requires only one-fifth of the sharpening of the knives. It is fitted with power feed raising and lowering attachment, with cylinder double belted and driven from both ends.

If interested in reducing your costs, write us.

Jackson, Cochrane & Company
KITCHENER - CANADA

The Super Sander



As installed in the plant of
MORGAN COMPANY
OSHKOSH, WIS.



**“The Invariable
Choice
of the Man
Who Knows”**



section of “431”
showing brushes
and details of Endless
Bed

No. 431 ENDLESS-BED SANDER

This Sander has revolutionized methods of handling short stock. The travelling bed, covered with slightly resilient rubber discs, carries the stock through the machine with minimum wear on the sandpaper.

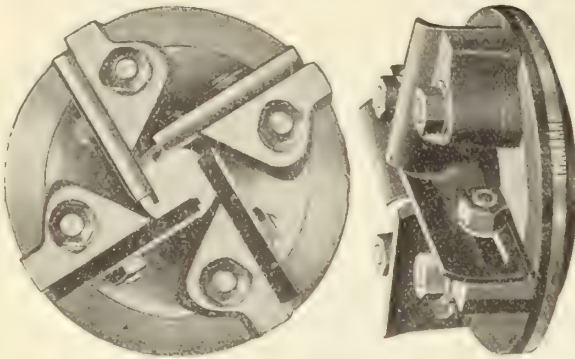
Stock may be placed on the table and hopper-fed through the machine. Equipped with Yates Spiral Drums, the only continuous-cutting drum. Sturdily built on vibrationless base. Many exclusive features provide “short cuts to production.”

Full details and sectional views are contained in our Sander Book, which will be sent free on request. Send for it today.

P. B. Yates Machine Co. Ltd.

HAMILTON, ONT. CANADA

U. S. Plant—Beloit, Wis.

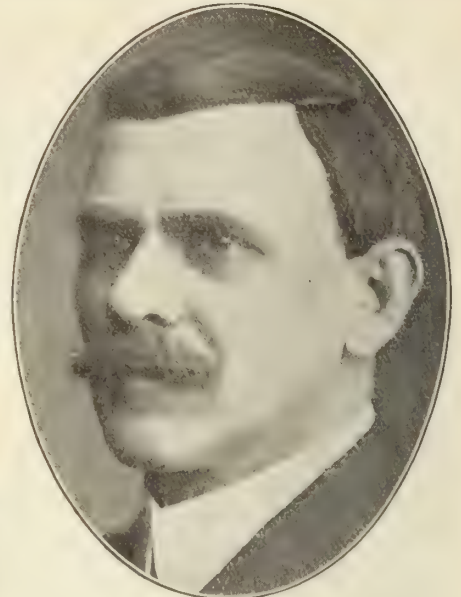
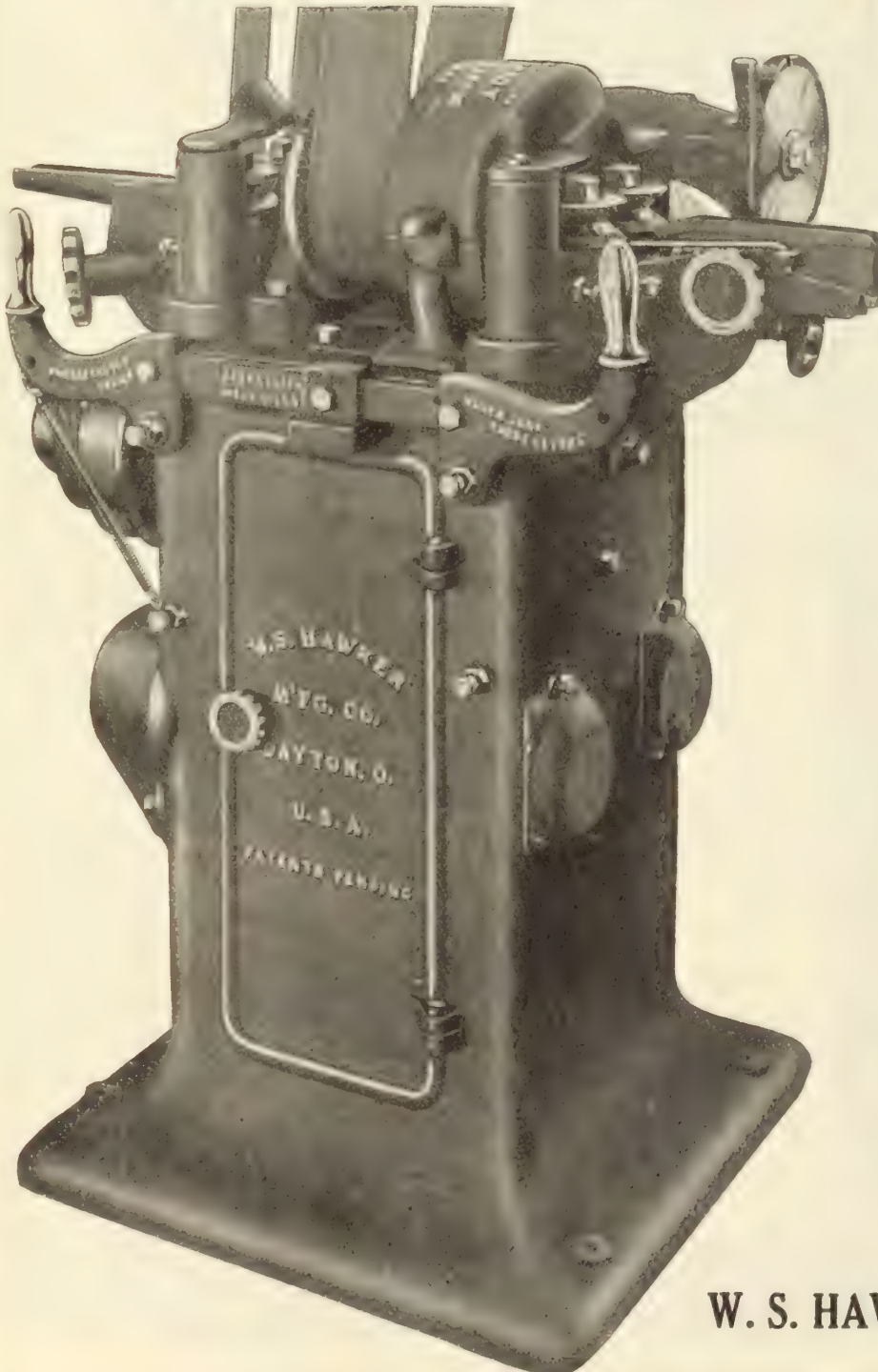


UNIVERSAL ADJUSTABLE CUTTER HEAD Patented.
Infringements (maker or user) will be vigorously prosecuted.

Two Heads

that have put
100% more profit
in the production
of Dowel Stock.

FOR SHIP TREENAILS



W. S. HAWKER.

Inventor and Designer of the World's most
efficient Tubular Turning Machinery

THE

Money Maker Adjustable Rod and Dowel Machine

The machine that is sent under a guarantee
to show you a gain of from 100 to 400 per cent.
before you buy it.

The improved dowel machine that 90 per
cent. of the largest and oldest machinery build-
ers and dealers now endorse and recommend in
preference to the solid chuck machines they
themselves previously built.

One cutter head turns from 1/4 in. to 2 in.
diameter.

Turns hard or soft wood equally well.

Handles heavy, oversized squares.

No choking of the cutter head.

Smooth stock.

Accurate sizes.

Works stock as short as five inches.

Rolls automatically centre variations in
squares.

Machines built to turn from 1/8 to 6 in.

We want to hear from every user of a solid
chuck dowel machine.

We can save you from one dollar out of
every two, to four out of every five, that the
operation of solid chuck machines costs you.

Engagements for competitive test solicited.

Formal orders not solicited. All sales made
after demonstration.

The only question is, are you willing to cut
cost of your dowel turning to one-half or one-
third of what it costs with any make of solid
chuck machine?

Machine delivers the goods before you buy.

State conditions of stock closely.

Special conditions require special equipment.

W. S. HAWKER MFG. COMPANY
DAYTON, OHIO.

The "Shimer Limited" Expansion Head

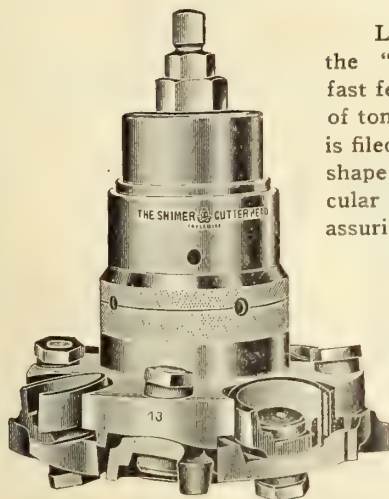


Fig. 627

Let us draw your attention to the advantages of using the "SHIMER CUTTER HEAD" for general Mill and fast feed Planer work. The Cutter is turned to cut the shape of tongue and groove desired, so that to sharpen the cutter it is filed or ground on its face, guaranteeing the user the same shape of cut during the life of the cutter. The bit being circular has from $3\frac{1}{2}$ in. to 5 in. cutting length to the cutter, assuring long wearing life to the cutters.

Note that the cutter, being fastened to a concave seat on a compound angle, assures the user of the proper clearance of cutters, consequently they never burn.

These heads are fitted with or without the Self-Centering Sleeve, and made Expansion or Solid, to suit the customer's wishes.

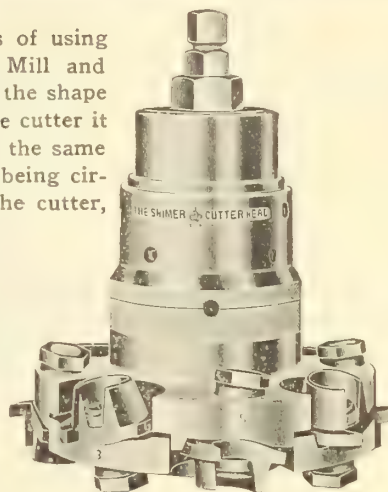


Fig. 268

Shimer Heads have been in use for sixty years, and their reliability and reputation have spoken for them in the past. Let us know your wants and we will guarantee their reliability at the present.

SHIMER CUTTER HEAD CO. OF CANADA, LIMITED

Successors to Samuel J. Shimer & Sons, Inc.

GALT, ONTARIO

Special "Beaver" Dado

Our "Beaver" Dado head is composed of two special bevel wing grover saws $\frac{1}{8}$ in. thick on outsides. The inside cutters being made with several teeth on each end and swaged for clearance will not chop or "break out." They are $\frac{1}{8}$ in. thick.



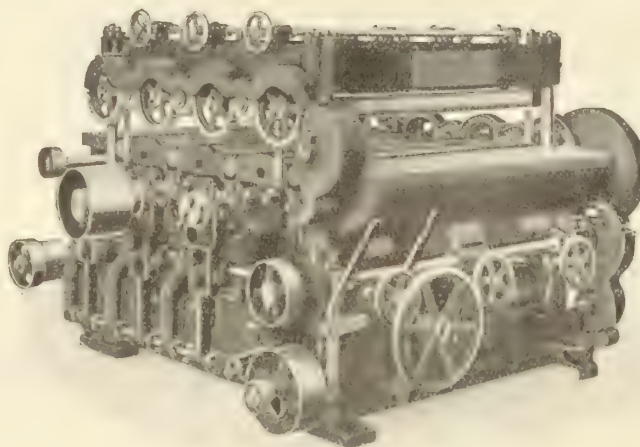
Specially designed to cut with or across the grain, leaving a smooth, clean surface. Indispensable in the manufacture of furniture and boxes.

Radcliff Saw Manufacturing Company, Limited

Cable Address:
"RADSAW, TORONTO"

1550 Dundas Street St. West, TORONTO

Agents for L. & I. J. White Company Machine Knives



Sanders!

3 and 2 Drum
Roll Feed

3 and 2 Drum
Endless Bed

Belt—all kinds

Single Drum

Drum and Disc

Double Disc

Double Spindle

Spindle and Disc

Flexible Arm
etc.

*The Fay-Egan "Lightning" line
is the most complete made.*

Put your sanding problems up to us—our line of sanders is complete—we can and will recommend the type best suited to your individual needs.

Every Fay-Egan Sander is a unit of highest efficiency, developed from a thoroughly practical design, by skilled mechanics with unlimited manufacturing facilities and highest grade materials.

Machine sanding is one of the greatest economizers in modern woodworking—are you getting the benefit?

*Write for Bulletins covering any
or all kinds of Sanders.*

J. A. Fay & Egan Co.

Established 1830

*World's Oldest and Largest Manufacturers of Woodworking
Machinery.*

153-173 West Front St.

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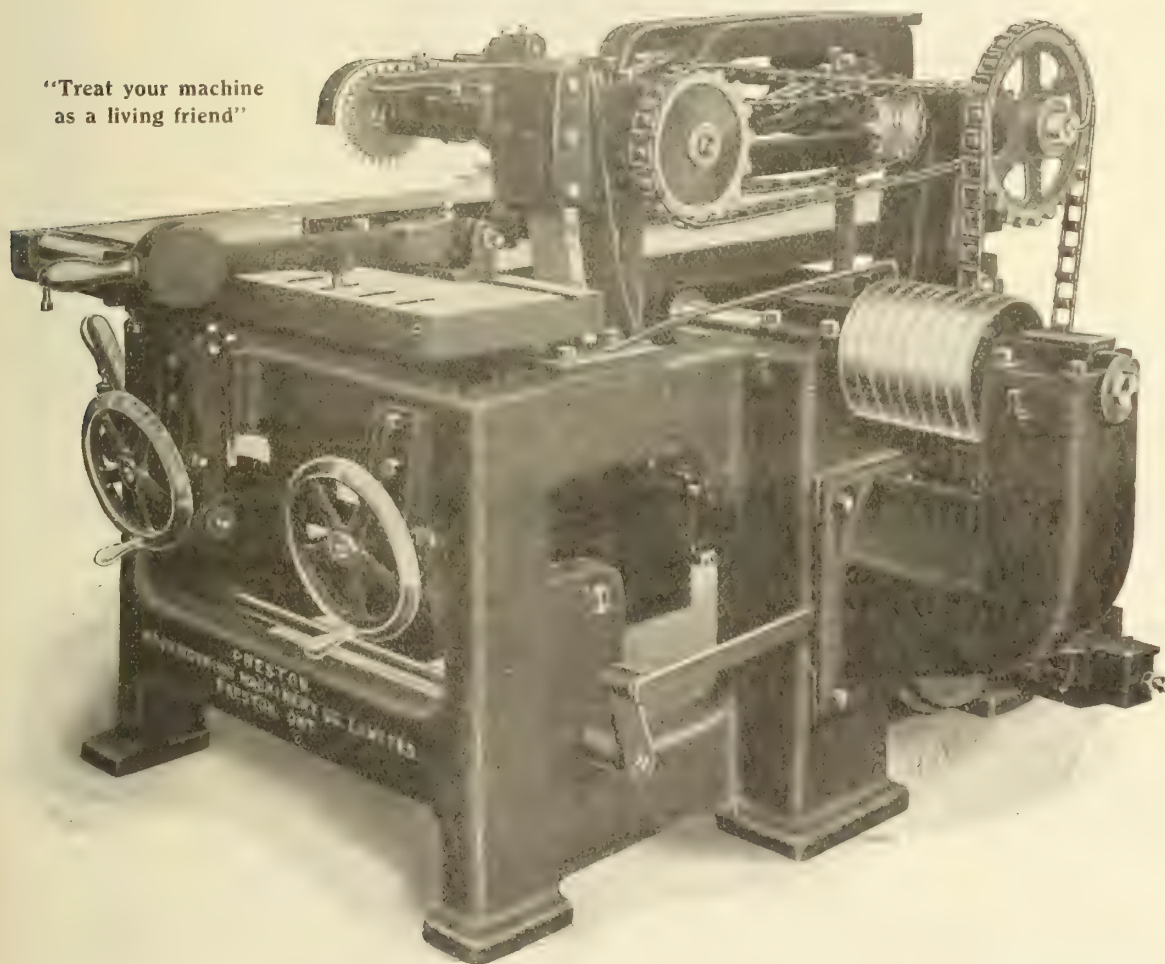
Cincinnati, Ohio

Get Ready for the Big Problem of Reconstruction

Look over your equipment and consider whether your efficiency might not be increased by the purchase of a

Preston No. 129 Power Feed Rip Saw with Variable Feed

"Treat your machine
as a living friend"



"Confidence is the mainspring of established trade. It is built up by selling customers the things they want and being sure they get what they think they're getting."

Predominant features:—The great saving in labor and the large increase in production possible.

The feed is variable from 0 to 240 ft. per minute and reversible if desired. The frame is one solid casting. Every bearing is self-oiling. Both table and upper works raised and lowered by hand wheels.

Send for Circular

The PRESTON WOODWORKING MACHINERY CO.

PRESTON, ONTARIO, CANADA

LIMITED

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A Few New and Refitted Woodworking Machines

from our large stock of up-to-date machinery. Write us for prices and information on any machines not listed that you may require.

CHAIN MORTISERS

- Stock No. 44911—Used M-256 Cowan Chain Mortiser with 5/16 in. bar chain and sprocket. No sharpener.
- Stock No. 44566—Practically new M-255 Cowan Chain Mortiser with 5/16 in. chain, bar and sprocket with 1 3/4 in. sprocket extra.
- Stock No. 44568—Practically new M-255 Cowan Chain Mortiser with 3/8 in. chain bar and sprocket and 5/16 in. chain bar and sprocket.
- Stock No. 44567—Practically new M-255 Cowan Chain Mortiser with 3/8 in. chain bar and sprocket and 5/16 in. chain bar and sprocket.

SINGLE SURFACE PLANERS

- Stock No. 32959—New 24 x 7 Eclipse Single Surface Planer, top and bottom rolls driven. Feed rolls are 3 1/2 in. diameter, 13 1/2 in. apart.
- Stock No. 31317—New Preston 26 x 10 Single Surface Planer with divided rolls. Feed rolls are 16 in. apart.
- Stock No. 31318—As above.
- Stock No. 44620—Used 24 x 7 Eclipse Planer, Matcher and Moulder, will match 12 in. wide.
- Stock No.—Used 24 x 7 Eclipse Single Surface Planer.
- Stock No. 33111—New 24 x 7 Clark & Demill Single Surface Planer, cylinder driven at both ends. Feed rolls 4 1/2 in. dia., 19 in. apart, all driven.
- Stock No. 29278—Used 30 x 8 McGregor-

- Gourlay Single Surface Planer, with divided rolls and chip breaker. Cylinder is driven at both ends. Feed rolls 6 in. dia., 17 in. apart. This is a good heavy type cabinet planer.
- Stock No. 31758—Used 24 x 6 Whitney Single Surface Planer, cylinder driven at both ends. Feed rolls 4 7/8 in. dia., 12 1/2 in. apart, all driven.
- Stock No. 44913—Used 28 x 6 Whitney type Single Surface Planer, cylinder driven at both ends. Rolls 4 3/4 in. dia., 13 in. apart, all driven.
- Stock No. 44846—Second-hand McGregor-Gourlay 24 x 7 Pony Planer, top rolls only are driven. Rolls are 3 in. dia., 13 in. apart. Machine is now manufactured by the C. M. C. Bottom rolls 5 in. dia., and machine will feed 25 ft. per minute. Tight and loose pulleys are 8 1/2 in. x 4 1/2 in., run 1000 r.p.m.

CUT OFF SAWS

- Stock No. 42306—Used Greenlee Automatic Cut-Off Saw, travelling saw carriage operated by foot lever and friction, 36 in. dia. saw, cuts 13 1/2 in. above table.
- Stock No. 44798—Used McGregor-Gourlay Dimension Rip and Cross Cut Saw Table. Will carry 18 in. saws, ripping 13 in. wide, with rip and cross cut fences, raising and lowering arbor, tilting table 48 in. x 36 in.
- Stock No. 42782—New Beach Iron Frame Rip Saw with wooden table, raising and lowering mandrel.

- Stock No. 42795-41—New No. 125 Preston Variety Tilting Saw Table.
- Stock No. 44733—New No. 127 Preston Variety Tilting Saw Table.
- Stock No. 42826—New No. 4 Dodds Variety Tilting Saw Table.
- Stock No. 42784—New No. 6 Dodds Variety Tilting Saw Table.
- Stock No. 44685—American Lightning Cut-off Saw. Machine is self contained. Size of table 26 x 31 1/2 in.

SASH AND DOOR RELISHERS

- Stock No. 44529—M-225 Cowan Sash & Door Relisher and Mortiser.
- Stock No. 40964—Jackson Cochrane Door Relisher.
- Stock No. 40968—M-234 Cowan Sash Relisher and Mortiser.

BAND SAWS

- Stock No. 44627—Used Genuine Westside 36 in. Band Saw, with tilting table, good up-to-date machine; first class condition.
- Stock No. 44590—New 36 in. Preston Band Saw with wire guard on top wheel, iron enclosing doors on bottom wheel.
- Stock No. 44653—Used 36 in. Preston Band Saw with wire guard on top wheel and iron enclosing doors on bottom wheel arranged for motor drive.
- Stock No. 44913—Used 36 in. Defiance Band Saw with re-sawing attachment, will carry 1 1/2 in. saw.

The A. R. Williams Machinery Co., Limited
TORONTO, CANADA

FURNITURE CARVINGS

We have
issued
a complete

**NEW
CATALOG OF
FURNITURE
CARVINGS.**

*Will send on
request.*



Our Carvings
are being used
by most of the
High-Class
Furniture
Manufacturers.

Exclusive orna-
ments—accord-
ing to customers'
design—our
specialty.

DECORATORS SUPPLY CO., Archer Ave. and Lime St., Chicago, Ill.



Whenever you buy a Simonds Saw, be it band, gang, solid, or inserted tooth circular saw, you buy first, last, and always saw quality that starts with the selection of the raw material, and comes right through to the last cut made in the mill with that saw.

We make every description of saws used in lumbering, mill work, and on woodworking machinery, cross-cut, gang, band, and solid or inserted tooth circulars. The next saw you buy let it be a **SIMONDS**.

SIMONDS CANADA SAW CO., Limited
VANCOUVER, B.C.

MONTREAL, Que.
ST. JOHN, N.B.

How do you Drive Your Screws?

Are you still using the old style hand methods, or are you one of the users of time, labor and material saving machines? Why stick to the old methods when by the introduction of automatic machinery you can more than double your output at about one-third the labor costs.

THE REYNOLDS Automatic Screw Driving Machines

Equipped with magazine feed, are especially designed for fast and accurate work. Their speed and simplicity of operation are responsible for the rapidity with which the work is turned out—an average of 1000 to 1200 ordinary screws may be driven per hour. One machine will do the work of from six to eight men using the hand drivers. It pays for itself in short order.

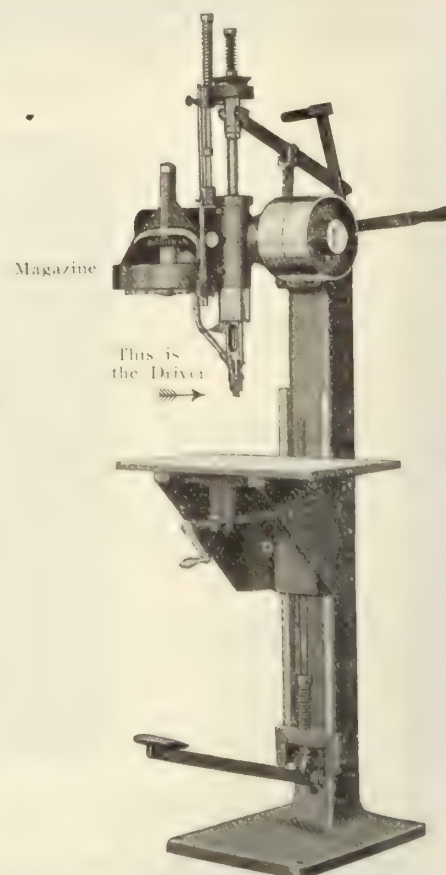
Ask for Catalog E, which gives full description and list of users.

Manufactured only by

The Reynolds Machine Co.

Department "C"

Massillon, Ohio, U.S.A.



*Don't run the risks of marring a beautiful piece of furniture
by using ordinary screws—*

USE ROBERTSON *Patent Socket Head* WOOD SCREWS

They are especially adapted for use in building furniture. The special driver fits snugly in the square hole in the head of each screw, preventing it from slipping and disfiguring the article.

They drive more easily than the ordinary screw and consequently result in faster and better work. They leave no ragged slots or burred heads.

We manufacture the bits suitable for all styles of drives, and supply them free with first orders. Actual tests with driving machines have shown that Robertson Socket Head Screws will drive 43 per cent. faster than the ordinary slot screws.

Guaranteed by the manufacturers.

P. L. Robertson Mfg. Co., Ltd.

MILTON, ONTARIO



One of the Drivers supplied FREE with first order.

Build Your Furniture with Robertson Socket Head Wood Screws

See That
Square Hole?



See That
Square Hole?

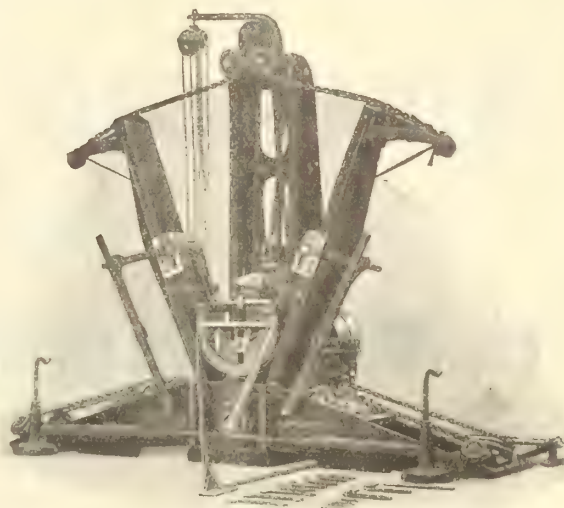


Why Struggle Along Continually With Obsolete Wood Bending Methods

when a little time spent investigating Defiance bending machines would lead to the salvage of your present material wastage— increase your present output, and reduce losses in breakage to a minimum. Defiance bending machinery is serving wood benders everywhere throughout the world. Its success, so pronounced and so long continued, proves Defiance methods of wood bending the most correct in use today.

DEFIANCE HIGH PRODUCTIVE WOOD BENDING MACHINERY

is built in various designs and sizes, and particularly adapted to bending rims for artillery wheels, automobile, auto-truck, wagon and carriage wheels, table rims, plow and truck handles, hames, bows for vehicle tops, and steering wheel rims. For the complete manufacture of the foregoing products many of the largest manufacturers all over the world are using Defiance equipment—all of which is a proven success and high productive machinery.



12" Patent Rim, Felloe and Hound Bending Machine

Illustrated and descriptive matter on your requirements in wood bending machinery will be mailed on request.

THE DEFIANCE MACHINE WORKS

New York City

DEFIANCE, OHIO, U. S. A.

London, England

RED GUM

"AMERICA'S FINEST CABINET WOOD"

The really successful merchant, it matters not in what line, is he who takes the trouble to ascertain

WHAT THE PUBLIC WANTS

This is especially true in its application to the furniture manufacturer and his retailer. He *has to* study his public—or he soon will have no public.

That portion of his public which is influenced by the principles of good taste wants RED GUM furniture—Why? Because the color, grain and soft, velvety quality of this, the finest of America's cabinet woods, when handled by a master cabinet-maker, results in a thoroughly charming piece of furniture—the kind that people of nice discrimination like to have around—and want strongly enough to *ask for*. Then can YOU supply it?

Makers and dealers desiring to see samples of RED GUM, both rough and finished, are invited to correspond with us at once.

GUM LUMBER MANUFACTURERS' ASSOCIATION

1314 Bank of Commerce Bldg., Memphis, Tennessee.

American Black Walnut

Pre-eminently

The Finest **CABINET WOOD** in the World

Unquestionably

American Walnut has
BEAUTY

—and—

DURABILITY
beyond compare

The richness of figure develops in the finish of this wood better than any other and, without a doubt, is the best wood to use in furniture and interior finish where high-class work is desired.

WRITE

PICKREL WALNUT CO.

ST. LOUIS

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MISSOURI

Walnut exclusively

IN 1881

GEORGE W. HARTZELL began converting walnut logs. Thus for thirty-seven years this institution has steadily progressed in its mastery of the problems involved in successful walnut manufacture.

Its notable growth is the result of profiting by experience—by the discovery and adoption of methods and equipment always in advance of current custom.

Hartzell's Choice Walnut is made by such methods from the best known growth of virgin trees—in a region which gave walnut its first claim to fame more than a generation ago.

OUR PRICE ON YOUR
ORDER WILL BE FAIR

Geo. W. Hartzell
Piqua, Ohio.

“Hartzell’s Choice Walnut”



SAP AND RED GUM

ALL KINDS OF Southern Hardwoods CRATING

"We specialize in furnishing Factory Stock, including all grades and thicknesses of Cypress, Sap, Red, Tupelo and Black Gum, Cottonwood, Oak, Elm, Sycamore and Ash. Permit us to take care of your order".

Write us

QUALITY AND SERVICE OUR MOTTO

Cornelius Lumber Company
ST. LOUIS, Mo., U. S. A.

"Gum of Quality" Yazoo River Red Gum

as produced by

Thomas & Proetz Lumber Company

No. 3400 Hall St. St. Louis, Mo.

is carefully manufactured; soft in texture; dark, rich in color; and admirably suited for furniture and interior trim.

Mills—Belzoni, Miss.; Catchings, Miss.
Naples, La.

If you are not buying from us, write today.

List of Dry Stock on Hand Ready for Immediate Shipment

RED GUM

61,211 ft. 1 x 13-17" Sap Gum, Box.
52,041 ft. 1 x 9-12" Sap Gum, Box.
51,207 ft. 1" 1st and 2nds Red Gum.
372,426 ft. 1" No. 1 Com. and Selects Red.
19,050 ft. 6/4 1st and 2nds Selects Red.
11,200 ft. 8/4 1st and 2nds Selects Red.
42,866 ft. 5/4 1st and 2nds Selects Red.
188,588 ft. 5/4 No. 1 Com. and Selects Red.
11,672 ft. 6/4 1st and 2nds Quartered Red.
9,475 ft. 5/4 1st and 2nds Quartered Red.
14,916 ft. 8/4 1st and 2nds Quartered Red.
37,880 ft. 4/4 No. 1 Com. and Selects Qtd. Red.
4,115 ft. 6/4 No. 1 Com. and Selects Qtd. Red.
11,200 ft. 1" 1sts and 2nds Selects Qtd. Red.
479,243 ft. 1" No. 1 Com. and Selects Sap.
137,947 ft. 1" No. 2 Com. and Selects Sap.
22,159 ft. 5/4 1st and 2nds Sap.
361,242 ft. 5/4 No. 1 Com. and Selects Sap.
179,049 ft. 5/4 No. 2 Com. and Selects Sap.
101,246 ft. 6/4 No. 1 Com. and Selects Sap.
116,047 ft. 6/4 No. 2 Com. and Selects Sap.

HACKBERRY

102,200 ft. 1" Log Run, largely No. 1 and 2 Com.
8,250 ft. 8/4" Log Run, largely No. 1 and 2 Com.

SOFT MAPLE

11,761 ft. 4/4 Log Run.

HONEY LOCUST

25,000 ft. 6/4 Log Run.

COTTONWOOD

82,425 ft. 1 x 9/12" Box Boards.
59,354 ft. 1 x 6-12" 1sts and 2nds.
19,297 ft. 1 x 13-17" 1sts and 2nds.
11,428 ft. 5/4 1sts and 2nds.
22,143 ft. 8/4 No. 1 Com. and Selects.
61,014 ft. 8/4 No. 2 Com.

TUPELO

192,020 ft. 1" No. 1 Com. and Selects.
27,240 ft. 1" No. 2 Com.

WHITE CANE ASH

12,412 ft. 2" Log Run.
76,142 ft. 1" No. 1 Com. and Selects.
54,296 ft. 1" No. 2 Com.
14,283 ft. 1" No. 3 Com.

8/4 DOG BOARDS—SMALL % 6/4

51,261 ft. Cypress.
179,403 ft. Cottonwood.
40,240 ft. Tupelo.
33,280 ft. Sap Gum.
33,860 ft. Sycamore.
23,040 ft. Hackberry.

FIGURED RED GUM

10,429 ft. 1" 1st and 2nds Plain.
26,241 ft. 1" No. 1 Com. and Sel. Plain.

PECAN HICKORY

26,300 ft. 1" Log Run.
133,190 ft. 8/4 Log Run.
14,625 ft. 6/4 Log Run.
9,550 ft. 10/4 Log Run.

MISSISSIPPI ELM

57,116 ft. 6/4 Log Run.
46,992 ft. 8/4 Log Run.
16,414 ft. 12/4 Log Run.

MIXED OAK—Largely Red

73,126 ft. 1" 1st and 2nds.
621,062 ft. 1" No. 1 Com. and Selects.
319,007 ft. 1" No. 2 Com.
20,116 ft. 6/4 No. 1 Com. and Selects.
29,241 ft. 8/4 1st and 2nds.
132,147 ft. 8/4 No. 1 Com. and Selects.
26,092 ft. 8/4 No. 2 Com.
87,987 ft. 10/4 1st and 2nds.
92,096 ft. 10/4 No. 1 Com. and Selects.
202,489 ft. 1" No. 3 Common.

MIXED HARDWOODS—

Hackberry, Ash, Elm.

151,942 ft. 1" No. 3 Com.—Gum & Cypress.

YELLOW CYPRESS

30,302 ft. 1/4 1st and 2nds.
43,313 ft. 4/4 Select.
45,594 ft. 4/4 Shop.
33,915 ft. 4/4 No. 2 Com.
226,216 ft. 5/4 Shop.
71,492 ft. 5/4 No. 1 Com.
33,246 ft. 5/4 No. 2 Com.
11,315 ft. 6/4 1sts and 2nds.
21,078 ft. 8/4 1sts and 2nds.
17,880 ft. 8/4 Select.
12,147 ft. 8/4 Shop.
49,478 ft. 8/4 No. 1 Com.
37,493 ft. 8/4 No. 2 Com.
11,200 ft. 10/4 1st and 2nds.
12,391 ft. 10/4 Select.
11,019 ft. Shop.
11,785 ft. 12/4 1sts and 2nds.
10,998 ft. 12/4 Select.

ARK. SOFT YELLOW PINE—

Air-dried, and fairly bright:

13,010 ft. 1 x 4" and up B. and Btr.
12,850 ft. 1 x 12" No. 1 and 2 Com.
41,880 ft. 1 x 4" and up No. 1 and 2 Com.

SYCAMORE

51,247 ft. 5/4 1st and 2nds.
59,403 ft. 6/4 1st and 2nds.
104,937 ft. 6/4 No. 1 Com. and Selects.
60,528 ft. 1" No. 2 Com.
39,249 ft. 5/4 No. 2 Com.
48,104 ft. 6/4 No. 2 Com.
12,146 ft. 6/4 No. 3 Com.
23,107 ft. 4/4 No. 3 Com.

QUARTER SAWN BLACK GUM

11,421 ft. 8/4 1st and 2nds.
23,140 ft. 8/4 No. 1 Com. and Selects.
14,291 ft. 8/4 No. 2 Com.

ABERDEEN LUMBER COMPANY,

- **Pittsburgh, Pa.**

Good Stocks

We have the following Lumber in pile at our Helena, Arkansas Yard, all of which stock is well manufactured, band-sawn, equalized and of good average width and length.

ASH	Feet
4/4" No. 1 Com. & FAS..	60,000
4/4" No. 2 Com.	180,000
4/4" No. 3 Com.	90,000
8/4" No. 1 Com. & FAS..	250,000
10/4" No. 1 Com. & FAS..	10,000
12/4" No. 1 Com. & FAS..	26,000

PLAIN WHITE OAK

4/4" FAS	25,000
4/4" No. 1 Com.	75,000
4/4" No. 2 Com.	90,000
5/4" No. 1 Com.	25,000
6/4" No. 1 Com.	90,000
8/4" FAS	10,000
8/4" No. 1 Com.	20,000
12/4" No. 1 Com. & FAS..	70,000
12/4" Bridge Plank	65,000

PLAIN RED OAK

4/4" FAS	10,000
4/4" No. 1 Com.	75,000
4/4" No. 2 Com.	100,000
4/4" No. 3 Com. R&W ..	400,000
5/4" FAS	20,000
5/4" No. 1 Com.	100,000
5/4" No. 3 Com. R&W ..	10,000

PLAIN RED OAK (Cont'd.)	Feet
6/4" FAS	45,000
6/4" No. 1 Com.	120,000
8/4" No. 1 Com. & FAS ..	20,000
10/4" No. 1 Com. & FAS ..	20,000
4/4" No. 1 Com. & FAS	
Sound Wormy	20,000

PLAIN RED GUM

4/4" FAS	10,000
4/4" No. 1 Com.	270,000
5/4" FAS	10,000
5/4" No. 1 Com.	50,000
6/4" No. 1 Com.	10,000

QUARTERED RED GUM

4/4" FAS	10,000
4/4" No. 1 Com.	40,000

SAP GUM

4/4" FAS	25,000
4/4" No. 1 Com.	70,000
4/4" No. 2 Com.	260,000
4/4" No. 3 Com.	70,000
4/4" Box Boards, 8-12" ..	35,000
4/4" Box Boards, 13-18" ..	40,000

SAP GUM (Cont'd.)	Feet
5/4" FAS	145,000
5/4" No. 1 Com.	185,000
6/4" FAS	10,000
6/4" No. 1 Com.	10,000

MAPLE

5/4" Log Run	10,000
8/4" Log Run	10,000
12/4" Log Run	35,000

ELM

4/4" Log Run	70,000
4/4" No. 3 Com.	30,000
12/4" No. 2 Com. & Btr. ..	50,000

HONEY LOCUST

4/4" No. 2 Com. & Btr. ..	10,000
---------------------------	--------

PECAN

4/4" Log Run	10,000
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CYPRESS

4/4" Log Run	70,000
5/4" Log Run	10,000
6/4" Log Run	20,000
8/4" Log Run	20,000
12/4" Pecky	10,000

We are also in position to take care of your requirements in Rotary Cut Veneers, Three large lathes—106 in. lengths.

"LET US HAVE YOUR INQUIRIES"

PENROD-JURDEN COMPANY,

General Offices: MEMPHIS, TENN.
Mills: Helena, Ark. and Penjur, Ark.



Here's Good News for You, Mr. Furniture Manufacturer

Now that the war has been brought to a successful termination and the United States Government has released walnut for commercial purposes, we are again running our veneer mills at full capacity. During the last year and a half we have accumulated some of the finest and best figured walnut logs that we have ever had in our possession. These stumps and figured logs are now being manufactured into veneers and we are in position to offer the finest line of walnut veneers that has ever been on the market.

Penrod Walnut & Veneer Co., Kansas City
Missouri

Two Conclusive Proofs Why You Should Buy Your Lumber From Us



Examine closely the picture above, then read the following letter we received a few days ago from one of the largest manufacturers of Mouldings in the world. (Lumber for Mouldings must be absolutely flat and straight.)

"We have been using exclusively gum lumber, both sap and red, shipped by you for the last three years, and have been well pleased with its character, both as to grade and condition. The condition of same being an evidence of careful handling before shipping. We have been well pleased with the transactions which we have had with you, and will endeavor to continue using your stock as long as available."

We also manufacture Oak, Ash, Elm, and Cypress at Louise, Miss., mills. Get our prices before placing your orders and become a SATISFIED user of Gum or one of the other Southern hardwoods.

BARR-HOLADAY LUMBER CO.

GREENFIELD - OHIO

HERE AGAIN

is the proof that we are not only PULLING FOR GOOD OLD

OAK

but also pulling for those who SELL IT—

THIS MEANS YOU.

Month by month we shall prove to the CONSUMER (Your Customer) that OAK FURNITURE—is due for a very heavy "COME-BACK."

Does your line meet the issue? If not, it can by next season.

AMERICAN OAK MFRS.' ASSN.,

LET US CONSULT TOGETHER FOR THE GOOD OF ALL CONCERNED. WRITE US. WE'LL ANSWER.
Room 1408 14 MAIN STREET, MEMPHIS, TENNESSEE

ANOTHER OAK FURNITURE ADV. APPEARING IN THE BEST MAGAZINES IN AMERICA.



"Good OAK FURNITURE is more nearly 'boy-proof' than any other equally fine cabinet wood."

Its elegance, dignity and artistic adaptability are backed by its sturdy resistance to dents and scratches. (Really a quite important point.)

"There is no finer heirloom than good OAK furniture." There is no more safe and enduring investment—none better worth insisting upon.

GEO. C. BROWN & COMPANY

Band Mill, Proctor, Ark.

Main Office, Memphis, Tenn.

Canadian Representative: M. E. Cummings, 814 Richmond Ave., Buffalo, N. Y.

St. Francis Basin Hardwoods Tennessee Aromatic Red Cedar

"We are enclosing check for the last car of Kraetzer Cured Gum, and will say that it was very nice stock, showing apparent care in its preparation and in manufacture, as well as being a high grade of No. 1 Com."

Selection from a letter written us by a satisfied user of our stock. Many other letters reproduced in our booklet "WHAT OTHERS SAY"—yours for the asking—may we send it?

DELIVERED PRICES AND DESCRIPTIONS CHEERFULLY FURNISHED

Oak Timbers Cut to Order

SAP GUM (Kraetzer cured)		Feet	QUARTERED RED OAK		Feet
4/4" Panel	...	14,000	3/4" No. 1 Com. and Sels.	...	2,050
4/4" Box Boards, 13-17 in.	...	75,000	4/4" 1st and 2nd	...	7,000
4/4" Box Boards, 9-12 in.	...	100,000			
4/4" Box Boards, 7-12 in.	...	125,000			
4/4" 1st and 2nd, 13-17 in.	...	100,000			
4/4" 1st and 2nd, 6-12 in.	...	200,000			
4/4" No. 1 Common	...	250,000			
4/4" No. 2 and 3 Common	...	200,000			
5/4" No. 1 Common	...	35,000			
6/4" No. 1 Common	...	100,000			
6/4" No. 2 and 3 Common	...	500,000			
8/4" No. 2 and 3 Common	...	30,000			
SELECTED RED GUM—PLAIN		Feet	PLAIN WHITE OAK		Feet
4/4" 1st and 2nd	...	250,000	5/4" No. 1 Common and Sels.	...	35,000
4/4" No. 1 Common	...	500,000	5/4" No. 2 Common	...	6,000
5/4" 1st and 2nd	...	25,000	6/4" 1st and 2nd	...	6,000
5/4" No. 1 Common	...	45,000	6/4" No. 1 Com. and Sels.	...	70,000
6/4" 1st and 2nd	...	50,000	6/4" No. 2 Common	...	58,000
6/4" No. 1 Common	...	150,000	8/4" No. 1 Com. and Sels.	...	7,000
8/4" No. 1 Common	...	40,000	10/4" Common and Better	...	5,000
SELECTED RED GUM—QTRD.		Feet	PLAIN RED OAK		Feet
4/4" 1st and 2nd	...	150,000	4/4" 1st and 2nd	...	10,000
4/4" No. 1 Common	...	250,000	4/4" No. 1 Com. and Sels.	...	50,000
5/4" 1st and 2nd	...	15,000	4/4" No. 2 Common	...	40,000
5/4" No. 1 Common	...	30,000	5/4" No. 1 Common and Sels.	...	6,000
6/4" 1st and 2nd	...	16,000	5/4" No. 2 Common	...	9,000
6/4" No. 1 Common	...	23,000	6/4" No. 1 Com. and Sels.	...	40,000
8/4" 1st and 2nd	...	15,000	6/4" No. 2 Common	...	35,000
8/4" No. 1 Common	...	30,000	8/4" No. 2 Common	...	5,000
10/4" No. 1 Com. and Better	...	16,000	MIXED OAK		Feet
12/4" No. 1 Com and Better	...	30,000	4/4" No. 3 Common	...	200,000
SELECTED RED GUM—Plain, Figured Wood		Feet	6/4" No. 3 Common	...	100,000
4/4" 1st and 2nd	...	58,000	SOFT ELM		Feet
SELECTED RED GUM—Qtrd., Figured Wood		Feet	4/4" Log-run	...	200,000
4/4" 1st and 2nd	...	33,000	4/4" No. 3 Common	...	30,000
5/4" 1st and 2nd	...	10,000	6/4" Log-run	...	100,000
8/4" 1st and 2nd	...	12,000	6/4" No. 3 Common	...	90,000
10/4" 1st and 2nd	...	5,000	8/4" Log-run	...	150,000
QUARTERED WHITE OAK		Feet	12/4" Log-run	...	35,000
4/4" 1st and 2nd, 8 in. and wider	...	9,000	SOFT MAPLE		Feet
6/4" 1st and 2nd	...	4,000	4/4" Log-run	...	60,000
6/4" 1st Common and Sels.	...	3,000	4/4" No. 3 Common	...	12,000
			6/4" Log-run	...	25,000
			6/4" No. 3 Common	...	21,000
			8/4" Log-run	...	60,000
			10/4" Log-run	...	25,000
			16/4" Log-run	...	37,000
			8/4" Log-run Hackberry	...	15,000
			6/4" Log-run Sycamore	...	5,000
			8/4" Log-run Sycamore	...	20,000

If interested in Tennessee Aromatic Red Cedar it will pay you to write us at once
WE CAN LOAD MIXED CARS OF HARDWOODS WITH CEDAR BOARDS.

Dry Spruce and Birch

Good Stocks, Prompt Shipments, Satisfaction

C. A. SPENCER, Limited

Wholesale Dealers in Rough and Dressed Lumber

Offices—500 McGill Building
MONTREAL - - Quebec

Hardwood Lumber

10 cars—2¼ and 2½ in. Bending Oak.

12 cars—1 in. FAS. Red and White Oak.

7 cars—1 in. No. 1 Com. Red and White Oak.

6 cars—1 in. No. 1 Com. & Btr. Qtd. W. Oak.

4 cars—1 in. Log Run Basswood.

2 cars—2½ in. No. 1 Com. & Btr. Dry Hard Maple.

3 cars—4 in. No. 1 Com. & Btr. Green Hard Maple.

We Have Quite a Complete Stock of Plain and Quartered Red and Sap Gum—Send Us Your Enquiries

THE E. & W. LUMBER CO.

South Bend, Indiana

The Atlantic Lumber Co.

Manufacturers

Strictly Soft Textured

Quartered **White Oak**
and
Plain **Red Oak**

Chestnut, Poplar, Cherry

Tennessee Scented
Red Cedar

High Grades—Quick Shipments

110 Manning Chambers - TORONTO
Phone Main 6386

HEAD OFFICE, BOSTON MASS.

Mills: KNOXVILLE, TENN., WALLAND, TENN.
FRANKLIN, ARRINGDALE and BUTTERWORTH, VA.

Immediate Delivery

We have on hand ready
for immediate shipment

Basswood

1" and 1¼"—1st and 2nd

Maple

1" — 2" — 3"

Above is exceptionally
fine stock. Write us
your requirements.

The McLennan Lumber Co.

Limited

MONTREAL

QUEBEC

American Hardwood Lumber Co.

St. Louis, Mo.

Large stock of—

Dry Ash, Quartered Oak
Plain Oak and Gum

Shipments from — NASHVILLE, Tenn.,
NEW ORLEANS, La., and BENTON, Ark.

"Furniture in England"

This book is an encyclopaedia of artistic suggestion—an education in itself.

Upwards of 400 exquisite
half-tone and color plates
on pages 14 ins. x 10 ins.

Price \$12.00—Delivered to any address in Canada.
Copies may be obtained from

The Woodworker Publishing Co.

Limited

Toronto

Ontario

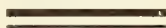
The Cruel Test of War Service—

Has proven American Black Walnut to have the most dependable structural characteristics of any known wood;

Has shown that the visible supply is probably 1,000,000,000 feet rather than 100,000,000 feet formerly considered the limit;

Has focussed public attention on walnut and awakened public appreciation of walnut as the wood to use in furniture that is bought to keep.

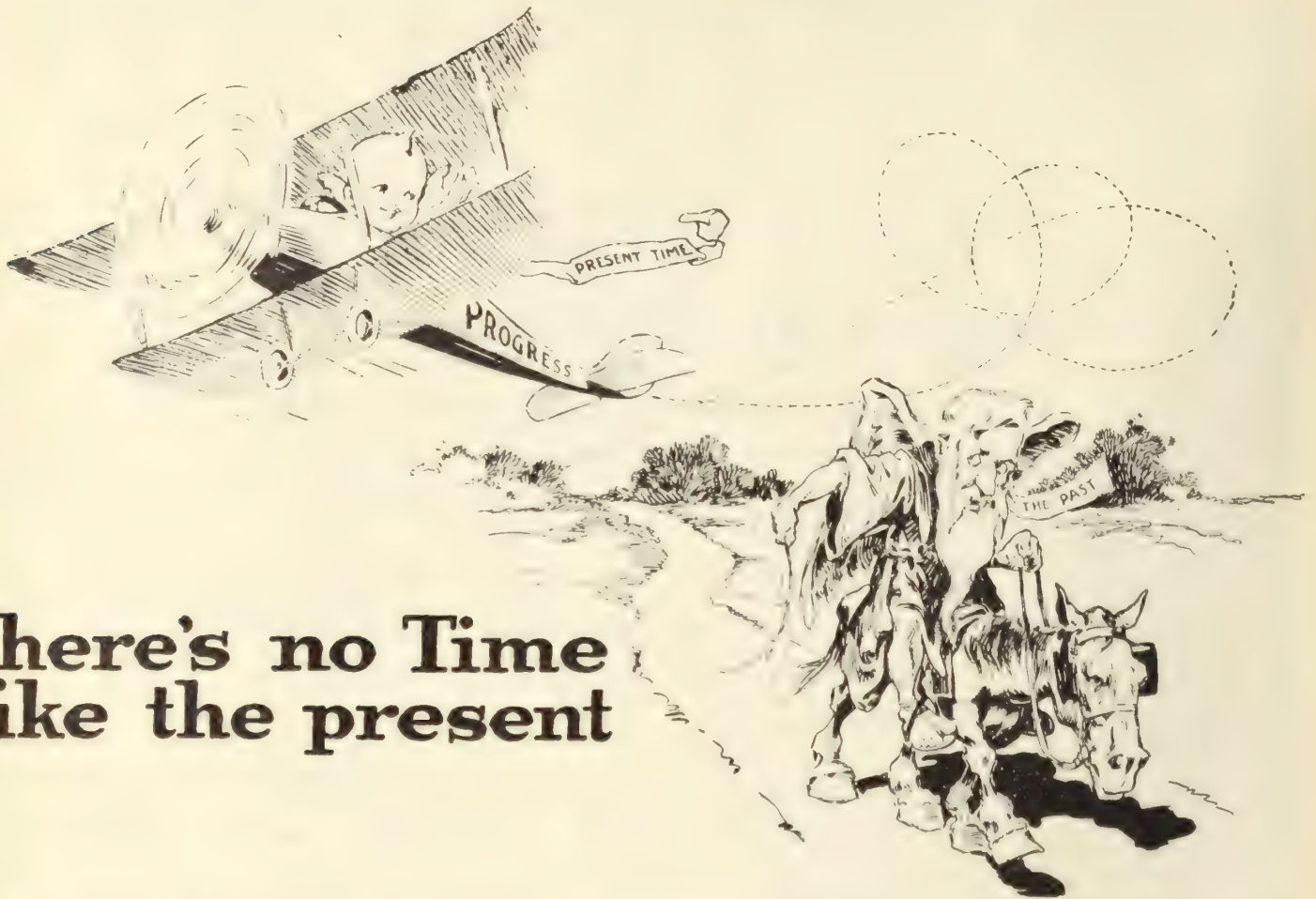
Woodworkers, consider these signs of the times in making your plans!



American Walnut Manufacturers' Association

McLachlen Building

Washington, D.C.



There's no Time Like the present

WE would like to give our friends a little inside dope on the hardwood situation, particularly as to stocks and the possibility of any general softening in the market.

Just taking the conditions at the mills as they stand, we find a radically curtailed input of logs both in the North and the South. It can be stated with authority that southern operators cannot hope for more than fifty per cent. log input, while in the North the soft winter will not make possible more than fifty-five to sixty per cent. at the most. Conservatively the total hardwood cut this year will not go over sixty per cent. of normal production.

So "**there is no time like the present**" for making your calculations as to 1919 hardwood requirements. The cards are against any permanent or general softening of the hardwood market. Manufacturing costs have **not** gone down and won't.

Line up now with us and buy your southern hardwoods from the choicest St. Francis River Basin of Missouri timber, shipped absolutely according to National grades.

Sincerely,

WISCONSIN LUMBER CO.

CHICAGO
BAND MILLS - DEERING, MO.

WIS

Indiana

Quartered Red and White

OAK

1,000,000 feet of dry stock carried
at all times.

ALSO PLAIN OAK AND ASH

We manufacture all stock carried.

Evansville Band Mill Co.

FRANK M. CUTSINGER, Pres.
GEO. H. FOOTE, Vice-Pres. & Treas.
JOSEPH WALTMAN, Secretary

Mills at EVANSVILLE, Indiana

HARDWOODS

The following is a partial list of lumber
which we have on hand, ready for quick
shipment.

ASH	2" FAS & No. 1 Com. 27,418'
1" FAS & No. 1 Com. 38,740'	2½" FAS & No. 1 Com. 41,753'
2" FAS & No. 1 Com. 28,200'	3" FAS & No. 1 Com. 14,457'
2½" FAS & No. 1 Com. 30,004'	
3" FAS & No. 1 Com. 39,608'	
BASSWOOD	PLAIN OAK
3" FAS & No. 1 Com. 11,080'	1" FAS & No. 1 Com. 217,650'
BEECH	1½" FAS & No. 1 Com. 13,400'
5/8" Log Run.....21,200'	1½" FAS & No. 1 Com. 60,000'
2" Log Run.....12,700'	2" FAS & No. 1 Com. 125,953'
	2½" FAS & No. 1 Com. 99,486'
	3" FAS & No. 1 Com. 161,017'
	4" FAS & No. 1 Com. 50,526'
SOFT ELM	HARD MAPLE
5/8" Log Run.....21,200'	1" FAS & No. 1 Com. 17,820'
1½" FAS & No. 1 Com. 24,300'	2" FAS & No. 1 Com. 29,935'
2" FAS & No. 1 Com. 95,273'	2½" FAS & No. 1 Com. 97,296'
2½" FAS & No. 1 Com. 71,533'	3" FAS & No. 1 Com. 28,676'
3" FAS & No. 1 Com. 40,338'	
4" FAS & No. 1 Com. 12,300'	SOFT MAPLE
HICKORY	1" Log Run.....15,100'
1" FAS & No. 1 Com. 11,500'	2" Log Run.....12,980'
1½ FAS & No. 1 Com. 31,780'	2½ Log Run.....34,332'
	3" Log Run.....16,280'

Our stock is first-class, and we guarantee satisfaction with
every shipment.

John I. Shafer Hardwood Co.

Farmers Trust Building
SOUTH BEND, IND., U.S.A.

We Operate 4 Band Mills

and carry large stocks of

Quartered White Oak
Quartered Red Oak
Plain White Oak
Plain Red Oak

Ash
Poplar
Hickory
Walnut

Gum

Elm

Maple, etc.

Crating and Dimension Stock a Specialty.

Can furnish you highly satisfactory
stock at right prices—TRY US.

MALEY & WERTZ

EVANSVILLE, INDIANA

Churchill-Milton Lumber Co.

Sales Office: Greenwood, Miss.

Mills—Greenwood, Miss.; Glendora, Miss.

Let us have your enquiries for—

Ash

Plain Oak

Quartered
White Oak

Quartered
Red Oak

Elm

Tupelo

Cottonwood

Plain Red
Quartered Red

Sap

Qtd. Red, Sap
No Defect

G

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OUR SPECIALTY IS DELTA GUM

STOCK IN KITCHENER, ONT.

45,000 Ft. 2 to 3½ in. Birch, dry.
 22,000 Ft. 4/4 in. Plain White Oak, W. Virginia Stock.
 25,000 Ft. 5/8 Spruce for rush orders.
 7,000 Ft. 4/4 No. 1 Common Oak.
 3,000 Ft. 4/4 No. 2 Common & Better Ash.
 2,000 Ft. 4/4 No. 2 Common & Better Birch.
 3,000 Ft. 12/4 No. 1 Common & Better Soft Elm.
 4,000 Ft. 4/4 No. 2 Common & Better Soft Elm.
 Also Excelsior and Wood Wool.

Ready for Shipment from Mills

15,000 Ft. 4/4 in. No. 3 Com. & Btr. Brown Ash.
 15,000 Ft. 4/4 & 6/4 No. 2 Com. & Btr. Basswood,
 Quebec stock.
 15,000 Ft. 4/4 No. 3 Com. & Btr. Basswood.
 15,000 Ft. 4/4 No. 3 Com. & Btr. Chestnut.
 12,000 Ft. 6/4 & 8/4 No. 2 Com. & Btr. Chestnut.
 30,000 Ft. 4/4 to 12/4 Log Run Soft Elm.
 14,000 Ft. 4/4 to 8/4 Soft Maple, Log Run.
 12,000 Ft. 4/4 & 8/4 Log Run Beech.
 200,000 Ft. 5/8 x 3 in. Merchantable Spruce.
 200,000 Ft. 5/4 x 4 in. & up Merchantable Spruce.
 150,000 Ft. 4/4 x 4 in. & up Mill Cull Spruce.

Write, Wire or Phone Orders at My Expense

PERCY E. HEENEY

202 Weber Chambers, KITCHENER, ONT.

BLACK WALNUT

Large Stock ready for immediate shipment, also Well Assorted Stocks at our Yards and Mills

in West Virginia and Kentucky

OAK

**Maple, Hickory, Chestnut
 Basswood and Poplar**

Prices and stock list on request

Burns & Knapp
Lumber Company
 CONNEAUTVILLE, PA.

High Grade Southern Hardwoods

Our mills produce the choicest in quality and manufacture and we ship exceptionally high grades in

Poplar

Ash

**Plain and Quartered Red and White Oak
 Red and Sap Gum**

Give us one trial and you will know where to order your future requirements for prompt shipment. Will quote delivered prices on request.

The W. E. Heyser Lumber Company

Main Office, 1509-15 Union Trust Bldg., CINCINNATI, OHIO

Hardwood Dowels

Plain, Straight and Spiral Grooved



"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co. Limited

ORILLIA ONTARIO

Sawmills at Zebra and Orillia, Ont.
Cable Address: "Special," Orillia, Can.

Holly Ridge Lumber Co.

Incorporated

MAIN OFFICE
LOUISVILLE, KY.

This Company markets only the products of its own Band Mills located at

HOLLY RIDGE, LA.
MONROE, LA.
MEEKER, LA.
ST. LANDRY, LA.

These mills are sawing logs removed from the lands of this Company, owned by it in fee simple.

It is our policy to make high grades and to ship our customers exactly what they buy, and in no instance do we mix the grade.

These mills are producing Gum, Ash, Elm, Oak and Cypress.

A consumer placing business in the hands of this Company is assured of having direct shipments from the producer to the consumer, and that the business will be conducted on a high plane in every respect.

BRANCH OFFICES

KANSAS CITY, MO.

Geo. H. Temple, Mgr. 204 R. A. Long Bldg.

GRAND RAPIDS, MICH.

Howard A. Shead, Mgr., 601 Grand Rapids Bank Bldg.

J. H. Bonner & Sons

Memphis, Tenn.

Mills:

Jonquil and Ruffwood, Ark.

Manufacturers

Band Sawn Hardwood Lumber

Write or wire for prices on
Gum, Oak, Elm, Etc.

Southern Hardwoods

Our mills now producing high grade stock, well manufactured, including:

Poplar, Chestnut, Basswood
Buckeye, Hickory, Red and
Sap Gum, Plain and Quartered Red and White Oak.

Agricultural and other special purpose stock, Oak Planking, Railway Material, Heavy Timbers, in fact almost anything in the line of Hardwood Lumber.

Buskirk-Rutledge Lumber Co.
Cincinnati, Ohio.

Red Gum

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The Reconstructed Market

The period upon which we have recently entered is usually referred to as the reconstruction period. This term is used, perhaps, on account of being the opposite to the period of destruction, which has been experienced for the last four years.

As far as the effect on trade is concerned, this period shows the same influence in the woodworking industry as is evidenced in other lines. The situation has been aptly described as a contest between the buyer and the seller to see which can hold out the longer.

The reconstructed market, or the market which will remain when reconstruction is over, should be world wide. It will be exactly what the individual manufacturer makes it. Canadian producers should work for the future in a spirit of aggressive optimism. The opportunities are at hand, and it remains for our captains of industry to make the most of them.

For the woodworker the market of the future will be large; in proportion to his vision of the possibilities in his particular line and the amount of courage and action with which he strives to make that vision come true. In other words, the market is there, but to take advantage of it he must first see or realize its existence and then go after it energetically.

There are some lines, such as furniture and lumber, the export trade of which can best be developed and handled by the organization and co-operation of all concerned. But there are numerous lines which offer hundreds of opportunities where the woodworker, who has the initiative, can create a clean, profitable, permanent business, a business that will help keep his plant running to capacity and return a fair margin of profit as well.

Where do these opportunities lie? Everywhere.

The aggressive manufacturer will find some knocking at his door; others will have to be searched for, and some will take a lot of persistent effort to locate. The inquirer will find in Canada hundreds of them, also in Britain, devastated Europe, South Africa, South America, Australia and the Orient. There are few corners of the globe where Canadian wood products cannot be profitably sent.

Some of these opportunities are large, some small, but there is profit in each of them and none should be overlooked. The demand for wood products has never been as great as it is to-day; there is a world-wide shortage of articles made of wood, and the supply has never been so inadequate.

You want to avail yourself of some of these openings. You would like to have the opportunity of filling export orders for some of these specialties or side lines, but nothing ever seems to come your way. Read the daily papers and the trade journals, and follow the work of the different trade commissions, both in Canada and Europe. They talk of big business, orders running into millions of dollars, portable houses by the hundreds and tens of hundreds, lumber by the hundred millions of feet., etc. All this tends to blind you to the fact that your opportunity, as an individual producer, lies in the smaller opening and in the requisition for special lines in certain cities and countries. To find these openings it is necessary for you to have persistency, initiative and aggressiveness.

Decide what you prefer to make or can make to the best advantage, and then look for your market or find the one you can reach the easiest and see what its demands call for.

If you knew that a certain dealer in Melbourne, Australia, was in the market for a quantity of an article that you could make, you would hasten to get in touch with him. In all probability the demand is there, though unknown to you. Write and inquire and do not stop with one inquiry, but make a large number. Send them to all the different countries that are experiencing a shortage of wood products and kindred lines.

It is only by an aggressive and alert policy that you can hope to benefit from present conditions and your future reconstructed market will be as large as you make it.

Project of a Channel Tunnel Revived

The project of a railway tunnel under the Strait of Dover, connecting England and France, was revived immediately upon the signing of the armistice. The plan was formed long ago, but the building of the tunnel was opposed in England through fear that the country might be invaded through the tunnel in time of war. The understanding between France and England is now so friendly that one no longer fears the other. With the completion of the tunnel trains will run from London to Paris in six hours.

Some Possibilities in Ship Furnishings

Canadian Furniture on Ships Built in Britain and Canada—Government Aid might be Forthcoming—Britain Imported Large Proportion from Foreign Countries

By Kenneth McGilvray

In these days of reconstruction it is natural for us to look back at things as they were prior to 1914, and what we have in their place to-day.

One of the first things we miss is our great passenger ships, we have very few of them left to take up the abnormal passenger and emigrant traffic which is sure to follow the great war, even to-day we read of the thousands of aliens and others waiting for ships on this side of the pond and great armies on the other side, waiting for ships to take them home.

A few years ago it was very common to read in British newspapers of the launching of some great ships, either to ply to Canada, or on the Canadian lakes, and on reading a summary of her fixtures and furnishings it would say that one of the saloons or other public rooms was paneled in Canadian maple or birch, that, practically was the only thing Canadian about her. Now in the period of reconstruction the Canadian woodworkers have a chance to change this to a very great extent. Why not have all the woodwork Canadian made and fitted complete? It would be a good advertisement to the new Canadians coming to these shores.

The iron and steel and engineering trades have made a start by building the ships, so far for freight only, but no doubt now that the war is over, freight will take second place to the passenger trade, which will allow more scope or openings for the woodworker. Then most of the great passenger ships that are left have been fitted up for carrying troops, munitions, and freight, in the great emergency, and now those ships have to be re-fitted again, with all their luxurious appointments, as great floating hotels for the passenger trade.

Large Quantities Would be Required.

Neither the shipping companies nor the shipbuilders in the old country will be able to supply the demand for the various furniture, etc. required for all these ships, plus the new boats to be built, and this provides a ready market for certain lines of ship furnishings.

Taking chairs for the dining saloons, which cost, prior to the war, \$10 to \$15 each, for 2nd class and \$20 upwards for 1st class, the shipbuilders seldom make them themselves, but buy them outside, often from a foreign country, and the number required for one ship is remarkable.

Take two of the largest ships on the Canadian run, like the "Laurentic" and "Megantic," which each carry 260 first class, 430 second class and over 1,000 third class passengers. The chairs required to seat this number will give an idea of the number required to fit out a whole new fleet of passenger ships. Then there are other chairs for the music room, the smoking room, the ladies cabin, the lounge, and some of the bedrooms.

True these chairs, for the most part, are off the regular run of work done here, but the number required is so great that it should form a profitable line for anyone making a specialty of them.

The dining room chairs are all on a swivel base, something after the style of a desk chair, only with-

out the tilting arrangement, and are usually made of a heavier build, all corners have to be rounded to protect the passengers from injury when the ship is rolling heavily. This rolling is the chief reason why settees cannot be used to a much greater extent on board ships, especially in the dining saloons, as it would be next to impossible for one person to get past another at table in heavy weather.

Lavatories for the State Rooms.

Coming to the furniture for the state rooms a 1st class one is usually furnished with a wardrobe, a chest of drawers, and a handsome double-folding lavatory and the usual Pullman beds. The second class rooms are furnished somewhat similarly, but often with one single folding lavatory.

These folding lavatories will soon be in great demand, as they have many advantages on board ship. They take up little room (a most important thing in ships), they are sanitary, easily cleaned, always tidy, and take the place of so many small pieces of furnishings.

I have no doubt but that some of the Canadian factories could make a success of these cabinets, both for home and export trade, with very little trouble. They have practically all the machinery required, and much of the same lumber that they are using could be worked in, as they are usually made of mahogany, oak, teak, or walnut.

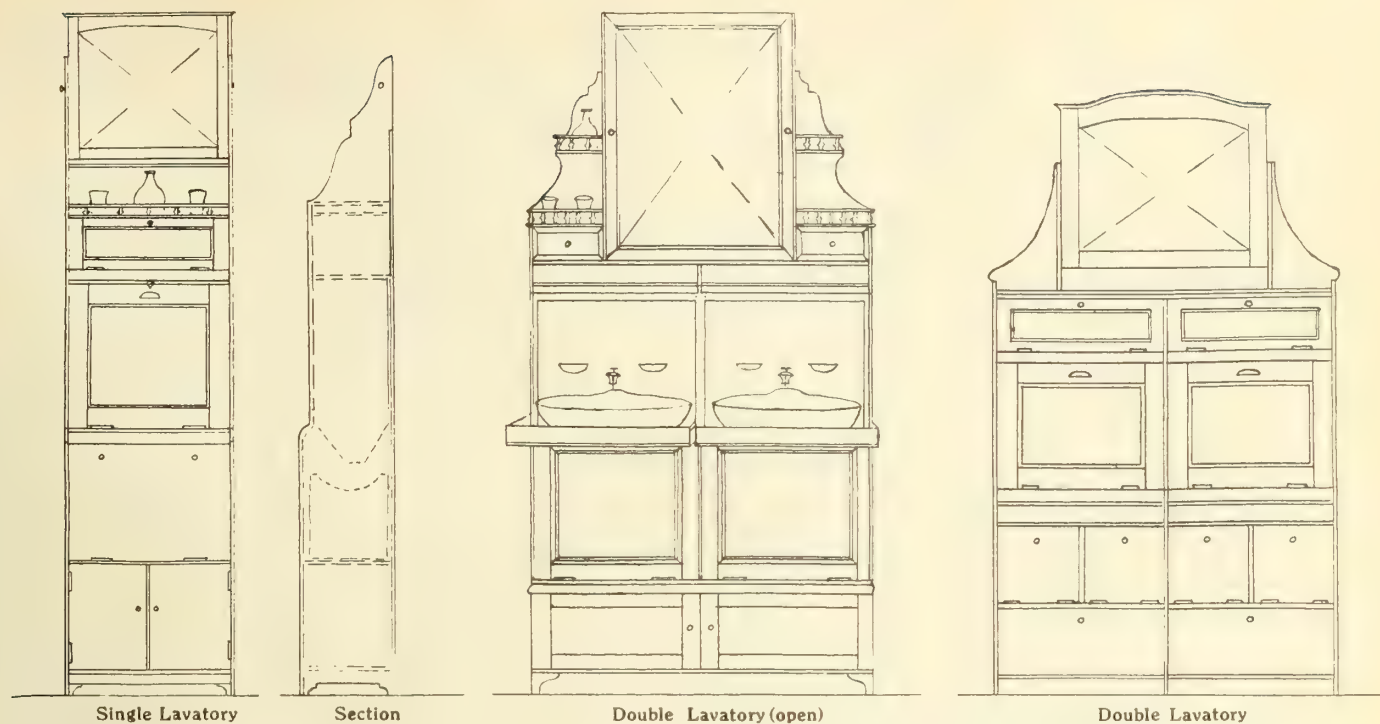
No Great Variation in Style.

There are a few different styles, but all are on the same principle, some must have a tin tank, (usually at the back of the mirror) for the water supply, others in the very big ships, have the water supplied by pipes. The same applies to the waste water, but makes very little difference so far as the furniture is concerned.

The height is usually 6 feet from floor to extreme top and never varies more than one to two inches as a rule, so as to give clearance under the iron girders of the deck above. The width for single folding lavatories is usually 16 inches to 18 inches, and the double ones 32 inches to 36 inches. The depth is 8 inches to 10 inches in both cases.

The single one is used for the usual state rooms, which are 6 feet to 6 feet 6 inches square, and must be very compact, owing to the small space left between the beds and the settee, which take up over 4 feet of the width of the room.

The mirror at top is either swinging or fixed. Under the mirror or in front there is usually a small shelf or ledge for combs, etc., then the double shelf for water bottle and tumblers, the top part of this shelf has holes cut to take the water bottle and tumblers and to keep them from falling when the ship rolls. Under this is sometimes the water tank or a drawer, or small cupboard, then comes the folding flap with the wash basin attached by screws to inside of flap. The flap has a 2 inch-wide piece on each side and a splayed piece on top (or front when open). These basins are made by several makers in the old country, the



Single Lavatory

Section

Double Lavatory (open)

Double Lavatory

best known perhaps being Messrs. Twyford's Ltd., London; and Wales, Brown & Co., Paisley, Scot.; and Doulton's Ltd., London, Eng. and Paisley, Scot.

The fawcet, sponge and soap racks are fitted on back of case in the inside, so that when the basin is folded up or closed they are inside it. The under part of this space is fitted with a hopper head to catch all water and guide it to the slop tin in the cupboard underneath. The water supply pipe is usually carried down the outside of the back, to the faucet, so that it can't be seen from the room.

The slop tin is usually the full size of the cupboard under the basin. Then underneath and about 2 to 3 inches from the floor is a small cupboard for shoes, slippers, etc.

The basin flap has to have a good self closing latch and good butt hinges and for extra strength has usually a rule joint casement opener, similar to that usually found on folding desk flaps, this is to take the weight from the hinges when basin is in use.

The sides, top and bottom are usually 11/16 inch thick, the other shelves half-inch thick. The back is let in a little past the flush, to allow the cabinet to be screwed tight to framing or wall. These screws are sometimes put through the back. Sometimes small iron or brass plates are provided to fix to wall framing.

Brass Fittings Most Suitable.

As iron is liable to rust quickly with the salt water and sea air, nails are to be avoided as much as possible, and all hardware should be of brass, nickel plated, or white silver. This applies to all hardware all through the ship.

All corners have to be rounded where anyone is liable to knock when the ship is rolling and raised moulding are also to be avoided, but these will be dealt with in a future article.

The double folding lavatory is similar to the single one and has one mirror with a division running up to top under this mirror.

Elevations of a double folding lavatory open and

closed are shown and with different mirrors in each, also elevation of a single one, with section. There are at least two other different styles in use.

When the "Royal Edward" and "Royal George" were built in Glasgow, Scotland, I was at the fitting out of them. They were at that time, and no doubt are yet, the finest ships sent out from the Clyde, as far as woodwork and decorations were concerned.

In board measure the wood used in these two boats, went into the millions of feet, and the furniture came from several firms, both British and foreign.

Government Should be Approached.

It is a good many years since Holland made a law that all ships owned there, had to be fitted up by her own tradesmen, and several ships built in Britain, were fitted out by the Dutch, the furniture, etc., all being shipped across. We are not so far advanced here yet.

As to Government aid for shipwork, the woodworkers have a very strong argument in their favor in that the iron and steel trades are getting assistance not only in this country but in most other countries. Then the need for passenger accommodation is even more urgent than the need for houses. It would also use a lot of our natural resources and give employment to a big number of men in semi-rural districts and towns.

An old chair has been found in a hall at Aberdeen, Scotland, dated 1661, which is attracting attention because it has been identified as African mahogany. That date is 150 years earlier than the first mahogany was shipped from Africa, so far as records show, and it seems to prove an earlier trade in that wood than was supposed. But the "wood doctors" are beginning to disagree. One pronounces the wood not mahogany but apple, while another believes it is yew. If experts, cannot agree, it is a waste of time for others to quarrel over the identity of the wood. It ought to occur to some of the disputants to send a small piece of the wood to a dendrologist.

Greater Efficiency in Woodworking Plants

Increase the Production of Each Man—Lost Motion Lessens Production—
Eliminate the Loop or Blind Pocket

By an Efficiency Engineer

Much has been said and done in regard to moving material through manufacturing plants, but in most cases it has applied to other lines of manufacture, and the woodworking departments have continued undisturbed.

In some ways it has been just as well, for in the mad rush for "efficiency" many places have been led into costly experiments in the endeavor to discover what really was needed to produce quantities of goods at low cost. Now that the business doctors have had their inning, we discover that the sound, basic rules upon which the successful ones operate, when stripped of various complications, are few and simple.

1. The help must be satisfied and sufficiently skillful and interested to keep the equipment working up to capacity.

2. The machinery must be up to date and kept working at its maximum output.

3. The ordering and accounting system must be comprehensive enough to perform its work in all details, and simple enough to avoid complications.

4. The plant arrangement must be such that the goods will move uniformly from the yard to the shipping platform without congestion or confusion.

On the first and third of the above items many books have been written and every plant manager has his own ideas in regard to help and shop system, moreover conditions vary somewhat from place to place, but the rules governing plant layout are simple and practically invariable.

Railroad Methods are Applicable.

Goods passing through a plant are like cars moving on a single track railroad. If there are several lines or series of operations, the plant is like several single track roads all moving the same way. In any case the material in front must be out of the way before the rest can pass, and the fewer the crossing, and the straighter the track, the faster the production and incidentally the longer the trains—or the larger the orders—that can be handled.

The analogy is exact. Any railroad would look foolish with a loop in its track a quarter of a mile in diameter coming back to cross the main line again. Yet, how many plants you have been in, where there are a couple of machines in a blind pocket of a room, necessitating the handling of thousands of feet of lumber in, around, and out again through the same door, with a consequent congestion of trucks and material and endless moving and removing of trucks every time a load must go in or come out.

Thoroughly Study Your System.

To begin at the beginning and lay out a plant along the lines of the railroad scheme, the starting place is the yard—worthy of some study itself. If it is a large plant the piles should be arranged in long parallel rows, each row accessible on one side to a railroad switch and on the other to the industrial track, or wagon road, or whatever the means of transportation may be within the yard.

The main track from the yards to the plant should pass the face of the kiln with proper switches and sid-

ings to allow material to go in and come out without interference.

Arriving at the plant the processes occur in about the same order in most kinds of plants, if we exclude mills. The raw lumber comes to the swing and rip saws. From there it goes to the surfacers or four side machines, shapers or tenoners; thence to the sanders, assembly and finishing room. Finally the finished material is packed and goes to the warehouse or shipping platform.

Of course this routine is varied somewhat by special operations in almost all cases, but the general arrangement is similar, from wagons to pianos.

Analyze in Detail Your Product

Now to lay out or analyze a plant for a given capacity let us make a list of every piece in the finished goods, classify it by dimensions and machines it must pass through. This will result in a list of machines necessary.

From the known capacity of each machine in pieces per hour or lineal feet per hour, the number of machines necessary to produce the given amount can be worked out. The square feet of floor space for each machine is known from the floor plan, and the amount of floor space for stock is estimated from the number of truck loads likely to accumulate between it and the next machine due to difference in speed, allowance for break down, etc. The sum of all this will give the floor space after adding for aisles, etc.

Finally take each piece of the finished product and write out the operations on it in sequence. Thus, a chair would show:

Leg (square straight). Rip saw, sticker, swing saw, tenoner, mortiser, sander, assembly.

Rocker—Surfacer, swing saw, layout, band saw, shaper, mortiser, belt-sander, assembly, etc.

How to Apply the Analysis.

When each piece of the product has been analyzed it will be discovered that a large part of it passes through the same or nearly the same series of operations, but that there are certain marked exceptions. Also it will be seen that the capacity assumed cannot be taken care of by an even number of machines; for instance, two and one-half stickers are required. Now these are the places where lost motion creeps in.

When a plant has been analyzed thus beginning with the finished product, and without regard to present equipment, a theoretical layout will be built up showing so many machines and so many square feet for each department.

When Output is Below Capacity.

Comparing these with the number on hand will show whether or not the space and equipment is being utilized to its fullest possibilities. If for instance, we come out with one and eight-tenths stickers (or two of course) theoretically necessary, and we find that in the plant three are having difficulty keeping up, and moreover the theoretical plan shows seven hundred square feet are necessary for this operation and the factory

floor layout shows twelve hundred as occupied, let us investigate. We find—maybe—that the stickers are working on long work and that they are set crossways of a narrow room because the line shaft runs that way, and the work all has to be turned around inside the building to feed it back through the next machine. Also there is a cupboard jutting out into the room using up a lot of valuable space, and finally by observation we find each of the machines running idle fully a third of the time, due to the work not being fed in regularly. After thorough investigation it is evident that, with the present arrangement of these machines, the amount of handling the stock requires would make it impossible to keep the machines full of work, but by driving them by motors so that they can be set lengthwise of the room, eliminating the cupboard, and putting on one

more man to truck the stock about, one machine and two skilled operators can be released to be used in another part of the plant where they may be needed.

Also we find that one roll-feed sander, six tenths the time of an endless bed sander, and four and four-tenths belt sanders are necessary. Actually there are two roll-feed, and six belt sanders going intermittently. By substituting the endless bed, cutting the stock up before sanding and utilizing the hopper feeding possibility of the machine, it can do enough more work than at present to take care of the work of one belt machine (by a slight change in the design of the product) and the operator will have enough time left to operate the odd four-tenths of the other belt, thus allowing one man to go into the finishing department where they may be short of help.—Yates Quality.

Some New Lines for the Woodworker

A Variety of Suggestions Which Might Lead to the Profitable Utilization of Waste Material—Common Lines Sometimes Overlooked

By Percival B. Walmsley

The woodworker should look out for new opportunities both for his own sake, to take the place of special work like war orders, and because the country needs the greatest amount of local and export trade to help carry its financial burdens.

With some new articles the individual manufacturer might be convinced of the possibility of making them at a reasonable price, but could not undertake the work unless assured of orders for them. And these orders will not come of themselves, but await a publicity campaign to create the effective demand and popularize the article supplying that demand. Of course sometimes the manufacturer conducts the selling campaign himself. Such was the case, I think, with incubators and kitchen cabinets.

To those who do that kind of work I suggest the possibilities in a really good hutch for Belgian hares. I am convinced that if there were on the market an outdoor hutch, such as I bought in England years ago, it would meet a demand already existing, but not articulate or "effective." There is no reason why these hares should not be as common an article of food as poultry or lamb. What hinders the development of the business is largely the trouble of feeding them and keeping them clean.

The Morant hutch (the one I bought) solved the latter difficulty entirely, and nearly settles the former. Its main feature is a wire mesh bottom, through which the rabbit can eat the grass and yet cannot burrow, and as the hutch is moved to a fresh place, all droppings are left behind on the ground. It is a most satisfactory way for the suburbanite, with a sufficient grass plot, or the person in the country who does not want to let the rabbits run at large. Handles are placed at the two ends of the hutch to enable lifting, and inside is a wooden compartment for sleeping quarters, and in which the doe has her litter. Except in the latter case, it is raised up from the ground, being set in grooves and the rabbits jump up into it, having the full use of the ground space. Half of the front is closed in and half is wired. In the absence of such a hutch, the animals are kept in a dirty little hutch, which disgusts people, and sets them against keeping or eating them when kept by other people.

The hutch would only need short wood, which

would utilize the waste from other lines, and the making would be very simple. The dimensions are roughly, length 5 or 5½ feet, width 3½ feet, height in front, 2½ feet, at back 2 feet. The roof is sloping, to run off the rain, and hinged so that it lifts up for attending to the rabbits. A factory operated by some large catalogue house would be a good place to start making the article, as a small number could be made at first, and the supply could be increased according to demand.

A Cedar Life Belt.

Another field to be looked over is the life-buoy and life-belt trade. Cork is an important article and increasingly dear. Shipbuilding is on the increase, with consequent increased demand for these articles. Could not a buoyant wood like cedar be substituted? I believe, in many cases that it could. I have experimented with a cedar collar (roughly made by myself) for swimming, and found it very effective. It kept me up, and was not in the way. When turned in a factory, and covered with canvas, I suggest it could well take the place of cork for a collar or belt. I do not know how it would compare on a long-time test of submersion in water, but as a rule, a short time is all it is required for. Certainly the round buoy, hung up on wharves, could be supplied by cedar, and much more cheaply. It might be insisted that seats in motor boats and steamers should be of this wood, of a certain thickness, with looped cord, and easily detachable. Woodworkers should investigate this matter, and could probably secure a good deal of business.

Wooden Dishes by the Million.

A rather revolutionary idea occurs to me. The great bugbear in the home is the washing of cups, plates, etc.. Why not wooden plates, cups, saucers, etc., made by the million, to be burned after use, possibly for kindling. Already we have the paper table-napkin, the paper cup, and the cone for the ice-cream, which saves a saucer or plate. It is only an extension of the same idea. Why not also wooden egg-cups, the small sort for eating the egg from the shell. I mean for permanent use. The china ones, dear enough, get broken; the enamel-ware is going out of sight for price. Here's a chance to fill the bill.

Wayside markets patronized by motorists are be-

ginning to spring up. The one at Unionville, Ont., will probably have imitators. Watch this movement. Here is an opportunity to be ready with tables, benches, small booths with roofs, all in a knock-down style, for easy setting up and removal, also various convenient receptacles for produce, to facilitate display and to protect against bad weather.

Cheese boxes. I have seen signs in the farming papers of a kind of revolt against the present wooden boxes, and a tendency to get them made of other material. Should this business be lost to the fibre-ware manufacturer?

Clogs. Leather will probably continue high for a long time. These are used largely in Lancashire, and our soldiers will have seen them in use in France and Belgium. Some time ago steel shoes were put on the market. Why not clogs for country wear? Plenty good enough for work around the stables and manure pile. Other people would follow in the use of them, such as cement or leather factory workers. Sandals too should be popularized for summer wear, with wooden, not leather soles.

Pipes. I have already shown, in the "Canadian Woodworker," how excellent pipes are being made from maple and black cherry, and that both these have good points, comparing favorably with the bruyere or "briar" pipe.

A Handy Carrier.

On one occasion, owing to difficulties in getting the ice-cakes off the lake, when the ice was getting soft, I had to improvise a carrier, by taking two old oars and joining them. It was light and effective. It was subsequently used a good deal by my boys for carrying in the 22 in. stove wood. Such a contrivance is very useful, but it must be strong, light, and the right width, and better still, with little supports for setting down so that it will not catch the hands. The factory could make something better than the private individual. Different kinds could be made for different uses—one for summer resorts for handling trunks would be handy; another and smaller would be great for Boy Scouts, or gardeners, and might have different attachments, as something for light bulky things, such as green vegetables or leaves, while others might be suitable for potatoes, carrots, etc. In many places it would be useful for handling blocks of ice. The one for the Scouts, or for small boys, could be made to take apart.

Something connected with this idea could be made, as a sort of holder of carrier, for a person carrying in an armful of wood. This often falls to women, and the method has not advanced since the stone age. The wood carrying is one thing which sets the country girl looking citywards. The weight is mostly on one arm; if arms are bare, the sharp edges cut, and wet or dirty wood spoils the clothes. It should not be hard to devise a sort of frame or tray suspended from the shoulder which would save the arms and protect the clothes. A person could then carry in double the quantity without feeling it.

A Suggestion for Travelling.

Once I saw a very useful thing for the traveller. A man was travelling with his family, a several nights' journey—in a day coach. When evening came he pulled out an arrangement like an enlarged checker board, which had been strapped flat with his valise. It was of two pieces of board hinged. He opened it, and placed it across from one seat to the other, and there was a berth for his small children, who could lie full length

with no fear of slipping off. He had had it made specially for himself.

A base use, but still a good use for wood, might be to make a piece of wood to fit the top of the sanitary pail for emergency cases in the country home, where there is no indoor closet. There are certain drawbacks to the chemical closet. Of course there's the commode, a large affair, and even the chair with a hole in the seat. I found this had many defects when used for an invalid. There is already, I believe, something similar for people travelling with children, to be used in connection with the closets on train or steamer.

For the Busy Mother.

A piece of furniture for the baby. There are uses for high chairs, perambulators, coops, etc., but in these nurseless, maidless days, the busy mother wants some place where she can set the wide-awake baby when answering the phone, or attending to her household duties. We have found that a small box from the grocer's answered the purpose. When the baby was quite small it could be placed on the table, where the baby was up out of the draughts, etc., and no floor space was taken with a cumbersome perambulator, and no danger of a nasty fall as from a high chair. It was easily moved from one room to another, and the baby could be noticed without having to be held. When older, a larger box was found useful, but should not then be put on a table. Even for the walking baby, it is sometimes the only place to put him temporarily, to be sure that he stays where he is put. He can sit or stand up in a box as he likes, and is kept warm while he sits. A furniture manufacturer could, of course, make something far nicer than the rough box, something enamelled or painted to facilitate washing of it, and with proper handles for carrying, and with other improvements. The need exists, as even well-to-do people make shift with clothes-baskets, which are too wide, and will tip over. One addition that might be made is to place two slats across the bottom, projecting some inches each side, to prevent it being upset.

New Toys of Wood.

Have we yet got wooden toys of our own to replace those hitherto imported from Germany? My little girl had a small washtub and wringer. The hardwareman said it was German-made, the last of the lot, 90 cents, reduced to 60 cents. Is the Canadian-made article yet on the market? Really something a good deal bigger would better please little girls.

Is there a snow-plough for the small boy? I have never seen one. My boys, like many more, made them for themselves, and good useful things they are. They provide amusement, and they clear the paths. There might be various sizes and patterns, and some for one boy and larger ones for several boys, with proper cords for pulling, and a place to put a block of wood or a small child as an extra weight.

In the matter of children's bricks, why are they such tiny things; some much larger would be more enjoyed, even if and perhaps because of being more noisy when falling down.

Of course these suggestions are of varying merit, but it is hoped the woodworker may find some that will be of use to him.

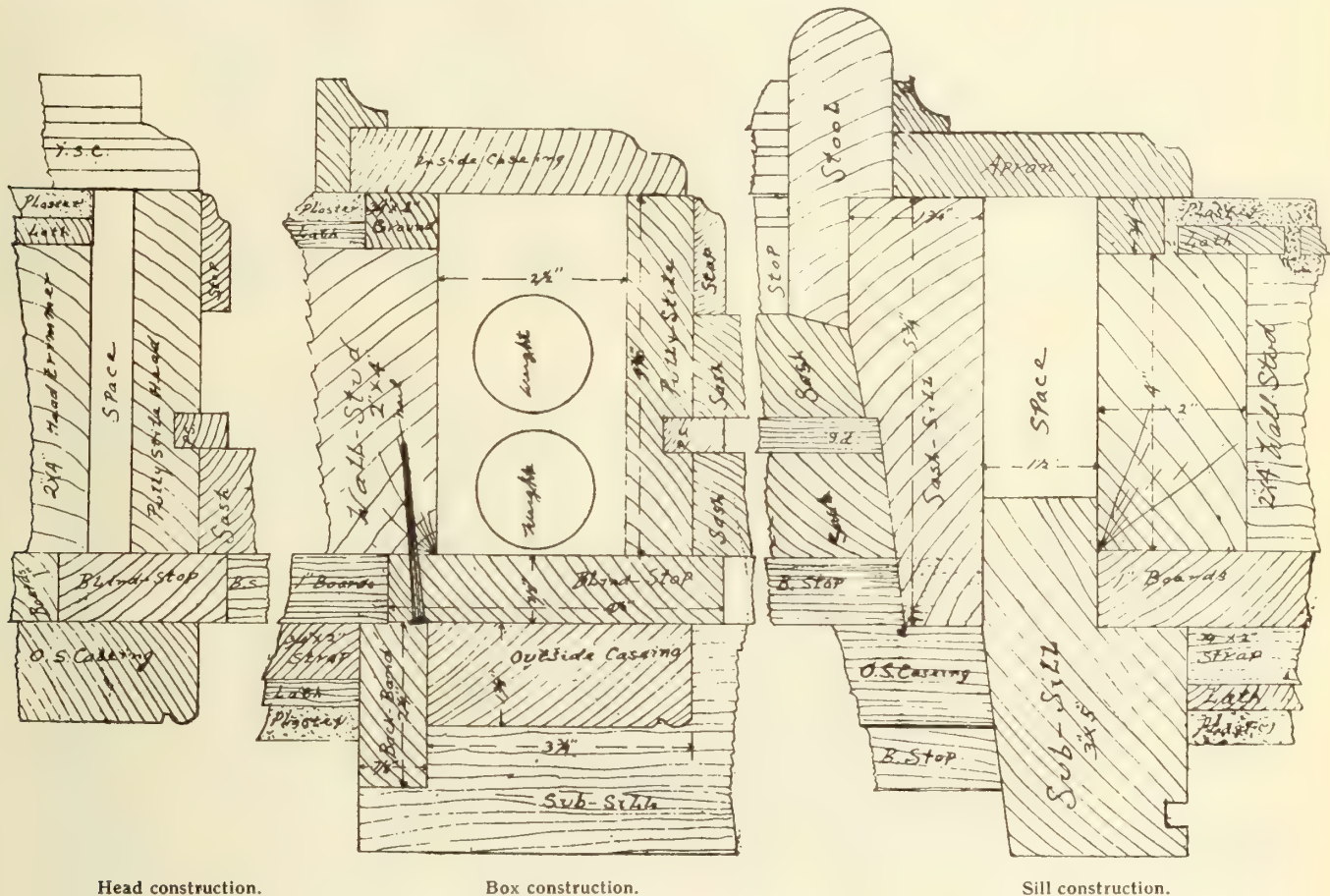
Look ahead and see brightness in the future—banish regret and useless remorse. It is misfortune or mistakes which have started most men on the road to real achievement.

Building Window Frames

By W. C. A. Stevenson

The making of an ordinary window frame is a very simple piece of work, but when it is desired to build a window frame and lay out the opening in the building to receive it so as to make a perfectly windproof job, it will require a little extra skill and more accurate calculation on the part of the workman. It is too often the case that not enough care has been taken with the making and setting of the frames. In new houses I have seen wind enough come in around the windows to

thereby breaking the point, as seen at sill section. The opening would be $11\frac{3}{4}$ inches, 7 inches of wood on sash, $1\frac{1}{2}$ inches frame head and space. The backband should not be put on until after the frame has been set into the building, as by this method you can get good nailing through the blind stop into the wall stud, as seen at the box section; then the back band can be put around, thus making another break in the joint. The piece of back band across the head would be given a slight pitch to form a drip over the head of frame, or, which would be still better, put a piece of galvanized iron over the top and allow it to extend up, say 2 inches,



Head construction.

Box construction.

Sill construction.

blow out a lighted match. This is a condition for which there is no excuse, and is due to pure carelessness on the part of the workman or the party in charge. The details shown herewith are designed for a roughcast or frame building, and if carefully followed will produce a good tight job.

The special features of this frame are: first, the blind stops, instead of being the ordinary $\frac{7}{8}$ inch by $1\frac{1}{2}$ inch, are $\frac{7}{8}$ inch by $4\frac{1}{2}$ inch, and are allowed to meet the sheathing boards on the centre of the wall stud, as seen in the box section. Care must be taken to frame the opening in the building the exact width, which is 11 inches wider than the width of the glass, made up thus: 4 inches for wood on sash, 2 inches for pulley stiles, and 5 inches for boxes for weights. The opening must also be made perfectly plumb. Then, by holding the sheathing boards $\frac{3}{4}$ inch back from the edge of the opening on the sides and top, the opening is ready to receive the frame. The blind stop on head need be only $2\frac{1}{2}$ inches wide, as there does not require to be a space left for weights on top (see head section).

Second, the sub-sill has a corner cut off it to allow it to drop over the opening instead of resting on top,

behind the strapping. This will prevent any water from working in behind the frame.

Third, the bottom sash and the stool on the inside of window are beveled to fit together, as will be seen at the box section. This makes a perfectly tight joint, and the moment the sash is lifted it frees itself.

A correspondent from Great Britain reports that there are a great many inquiries there for Canadian goods and prices. Wooden articles for domestic purposes are in demand. There is a big demand for tool handles and a good business could be worked up in this line, despite the fact that the Americans have been in the field for some time. The different trade commissioners emphasize the necessity of sending samples and complete prices whenever inquiries are forwarded from Britain.

Efficiency is one of the watchwords of modern life; but originating, though the word does, in the human brain, it is precisely there that it is probably most neglected. The average brain is a most inefficient bit of machinery.

The 1919 Furniture Exhibitions a Success

Buyers from Every Province Were in Attendance—Gratifying Results Achieved—Furniture Shown was Above the Average

The different furniture exhibitions held throughout Ontario, last month, were very successful. The buyers were attracted in larger numbers than on former occasions, and from the viewpoint of orders placed the results were most gratifying.

The furniture manufacturers are all enthusiastic over the results achieved and are unanimous in their statements that the exhibitions for 1919 were the biggest and most satisfactory furniture shows ever held in Canada.

The buyers were very representative, having come all the way from Vancouver on one side and St. John and Halifax on the other. While the majority were Ontario dealers, yet there were representatives from every province in the Dominion.

The Different Periods Were All There

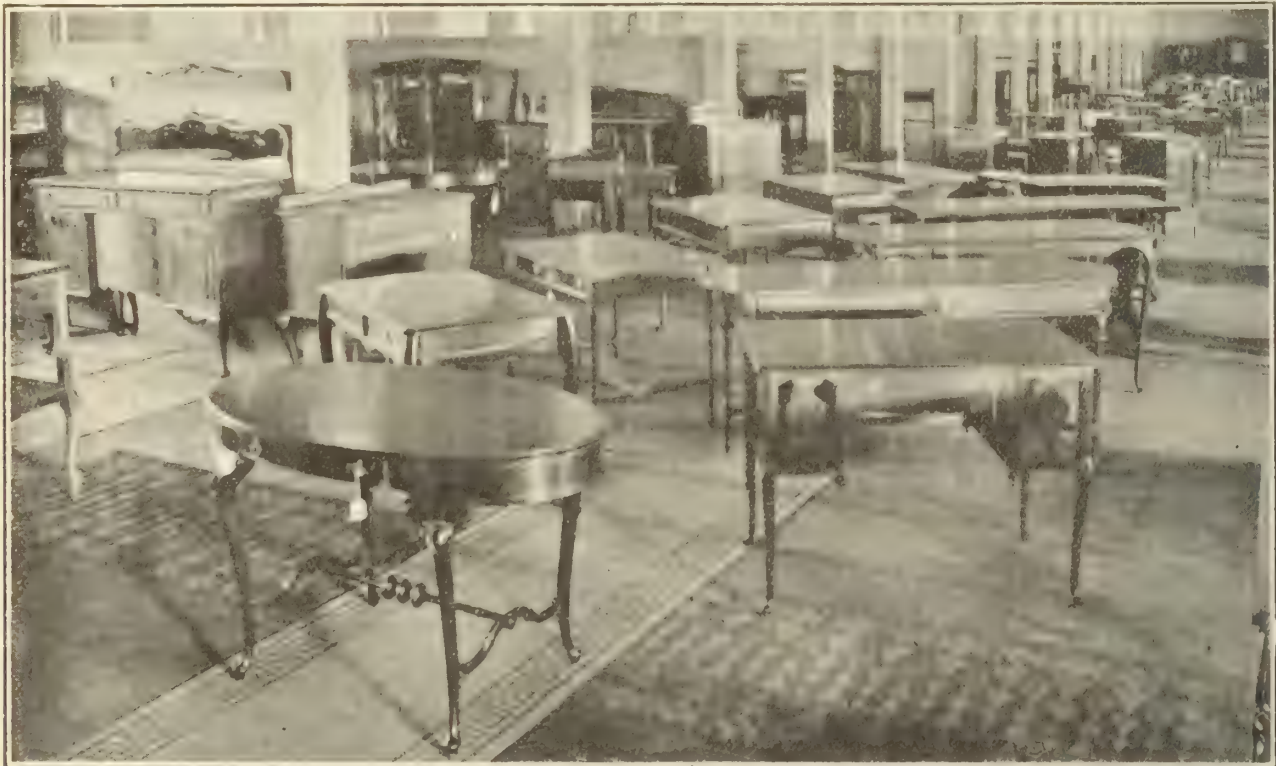
The most noticeable feature of the different exhibits was the exceptionally high quality of the dif-

ferent lines shown. It is safe to say that as a representative showing of high grade furniture the Canadian exhibitions which have just closed have seldom, if ever, been equalled on the American continent.

Among the upholstered furniture the deep, comfortable Chesterfields held first place. These were made with loose cushions and with pollow or cushion arms, and were covered in the darker shades of tapestries that are so in demand at present. In addition there was a fine display of parlor suites and chairs in silks, tapestries and plushes. One of the newest coverings shown was a beautiful English mohair plush, this proved very attractive, and was much commented on.

Staple Lines Were Not Overlooked

In addition to the "quality" lines there was a very attractive showing of high class furniture in the different woods and finishes. Included among these



A section of the furniture exhibit—Geo. McLagan Furniture Co., Ltd., Stratford.

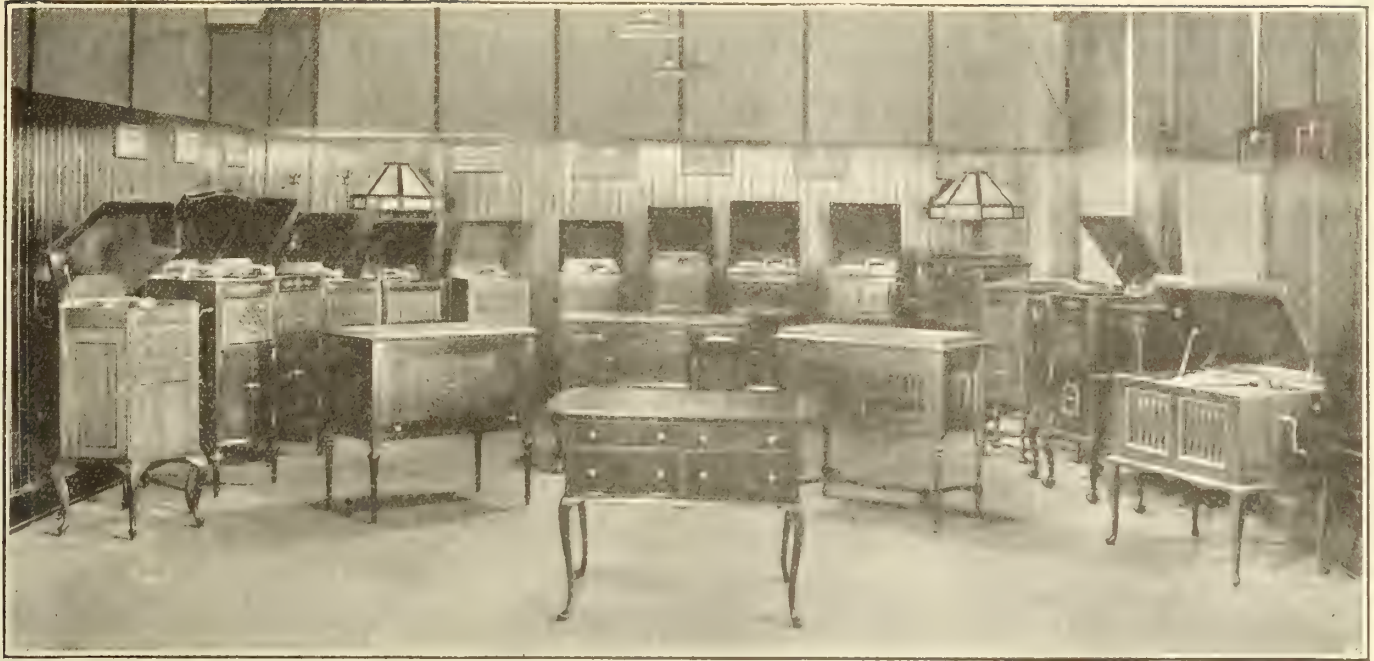
ferent lines shown. The Canadian furniture producers were determined to show the buying public that they were able to make furniture that would compare more than favorably with the best made. They succeeded; not an American design was shown. Instead, they went to Europe and reproduced the old masters, and the distinctive periods, at their best.

The exhibits comprised an amazing array of Louis XVI., Queen Anne, William and Mary styles. Spanish and Italian Renaissance periods were represented, also Heppelwhite, Sheraton, Chippendale and Jacobean. It was an imposing assortment of suites in oak, mahogany, red gum, walnut, and the different enamel

were parlor, bedroom and dining room furniture in endless variety. Attractive designs in hall and den furniture, secretaries, spinnet disks, tea wagons and parlor tables.

Parlor lamps were also shown in various designs and when lighted, the soft lights from their many-colored shades added a home-like touch to the different exhibits.

Another line that must not be overlooked is phonographs. Judging from the size of the exhibits and the variety of the cabinets shown the manufacture of phonographs has assumed immense proportions. The exhibits ranged from the smaller table machines



Phonograph exhibit—Geo. McLagan Furniture Co., Ltd., Stratford.

to the high class cabinets in fancy figured woods that sell for hundreds of dollars.

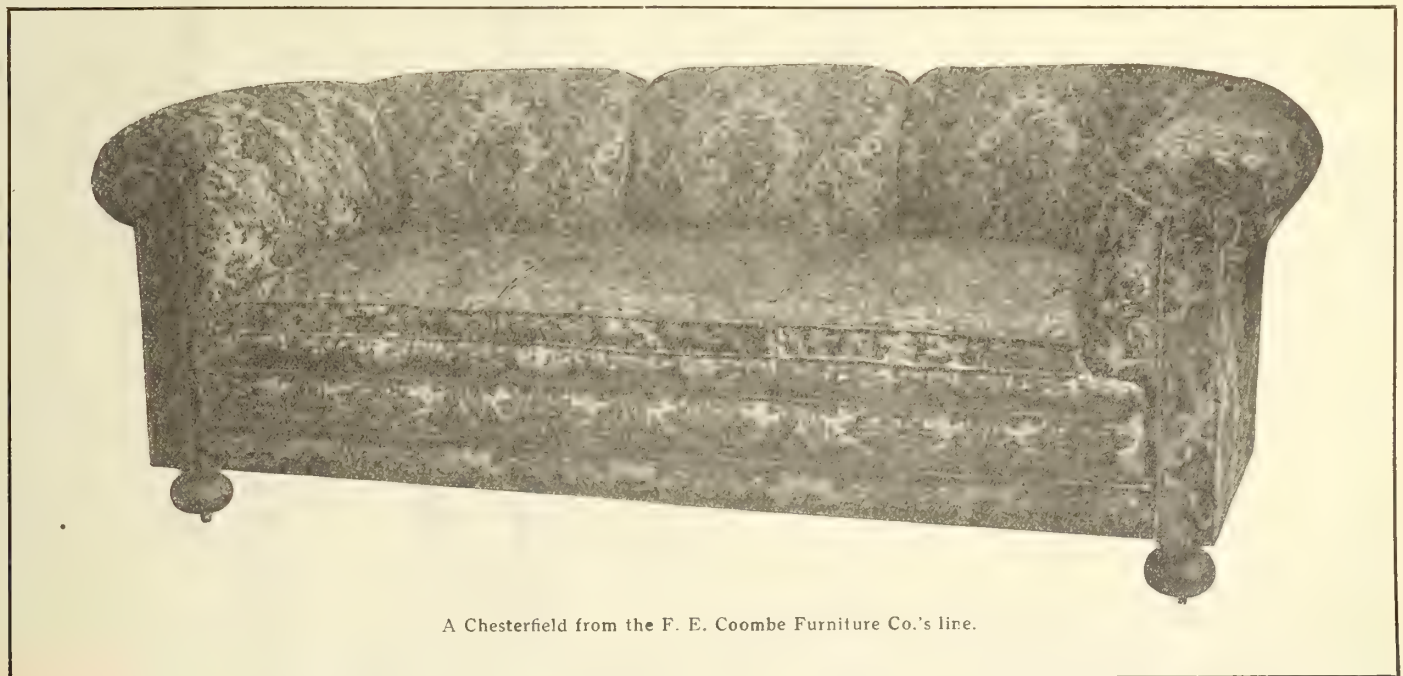
Splendid Taste Was Shown

The exhibits were all tastily arranged and every piece was shown to its best advantage. No pains or expense seems to have been spared and the varied shows reflect great credit on those that were responsible for their arrangement.

The manufacturers are to be congratulated not only on the showing that was made, but on the splendid spirit that prompted such elaborate displays. The tastes of the furniture buying public has been steadily improving during the last few years. Exhibits such as have just closed will educate the public to the real value of good furniture, and what it means to the home, and will increase the demand for furniture of this description, as no other method could.

With the public calling for a better grade of furniture, cut prices and cut-throat competition will gradually be eliminated. Better prices will be the rule and the manufacturer and workmen will reap a more adequate return for the effort expended.

Another point is, that with Canadian furniture manufacturers turning out furniture such as has just been shown, the markets of the world are open to him. There is a big demand for the highest grades of furniture, not only in Europe, but right next door. The American dealers are clamoring for furniture of this class, and the "Canadian Woodworker" believes that a good market for superior furniture is waiting, below the border, for the manufacturer who takes the trouble to go after it. The present time is one that calls for prompt aggressive action. It is the man with the push who is going to reap the big reward. Are you going to be the successful pioneer?



A Chesterfield from the F. E. Coombe Furniture Co.'s line.

William and Mary China Cabinet

Very Attractive in Dull Finished Walnut—Stock Bill and Instructions
—Suitable for Bookcase As Well

By W. J. Beattie

The William and Mary style looks better when made in walnut than when made of any other material.

The accompanying elevation sketch shows an adaptation of this style for a china cabinet. This same design could be utilized for a bookcase, by substituting solid gables for the glass frames, less the rabbeting, etc. The gables would be $48 \times 9\frac{1}{2} \times \frac{3}{4}$ inches.

The finish is a dull rub finish. The article is stained with a walnut water stain, then sanded and given a shellac wash. It is then filled and given three coats of good varnish, allowing each coat to dry perfectly dry, it can be rubbed to a smooth dull finish.

In an article of this kind the interior is finished as well as the exterior and must be smooth and made of good clear material. The insides of the drawers can be finished by giving them one coat of shellac and then one of flat drying varnish.

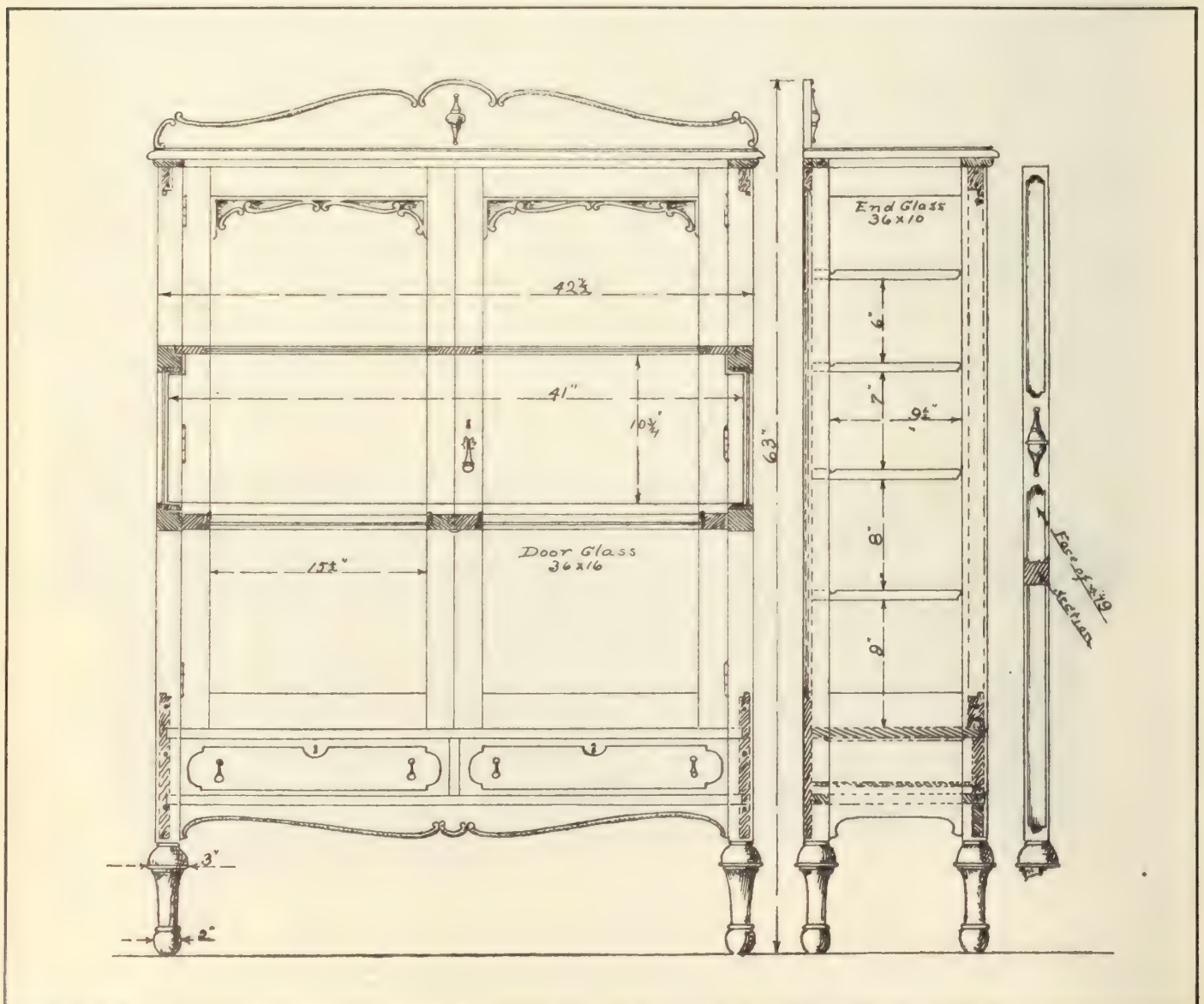
Dowell construction is used entirely with the exception of the backing, which is tongued and grooved. All material except that going into the back, must be

buzzed perfectly flat and true before being brought to the finished thickness. The doors especially need to be made of carefully selected stock and worked as straight and true as possible.

The pilasters run the full height of the cabinet and the swelled parts of the turning are glued on. This makes a far more substantial job than when the foot is turned separately and fastened on with a dowel. The latter method is very poor construction, for an article of this kind, as the feet invariably work loose in time.

The faces of the pilasters are recessed as shown in the sketch. If desired this recess can be run right through instead of leaving a space in the centre of the half turning.

The small frets in the tops of the doors, marked No. 11 on the stock bill, are let into the glass rabbit an eighth of an inch, so that they lie flat against and are held in place by the glass. These frets are better made out of select stock one eighth of an inch in thickness,



STOCK LIST

Bill No	No Pieces	DESCRIPTION	Wood	Length	Width	Thick	REMARKS
1	1	Top Back	Wal.	43 1/2	5 1/2	3/4	Sand, mark, glue on overlays. Band saw
2	1	Half turning	"	4 1/2	1 1/2	1 1/2	
3	1	"	"	4 1/4	1 1/4	3/4	Sand mould edge 2 ends
4	1	" Under Cleat	Bir.	39	3/4	"	
5	1	" Frame Front rail	Wal.	43 1/2	2 1/2	1	Introd ends, Glue
6	2	" " End	"	13 1/4	"	"	Clamp Sand
7	1	" " BK	Bir.	39 1/4	1 1/4	"	Mould edge and 2 ends Bone Glue
8	4	Door Stiles	Wal.	40	2	1	Dowel & Rabbit
9	2	" Top Rails	"	16 1/2	"	"	Clamp Sand
10	2	" Bottom	"	"	2 1/2	"	4 1/2 in. em.
11	2	" Frets	"	"	3 1/4	1/8	
12	1	Bottom Birch edge	"	41	1 1/2	3/4	Check Corners, Dowel
13	1	" Frame Front rail	"	39	1 1/4	"	Dowel
14	1	" " BK	Bir.	"	1 1/4	"	
15	2	" " End	"	9 1/2	3	"	
16	1	" " Centre	"	"	2	"	Clamp Sand
17	1	Dr. Division	Wal.	4	1 1/4	"	
18	1	Base	"	39	2 1/2	"	Sand mark, glue on overlays. Band saw
19	2	Front Pilasters	"	57	1 1/4	1 1/4	Dowel, glue on overlays. Band saw
20	2	BK	"	"	"	"	
21	1	Pilaster Turning	"	52	1 1/2	1 1/2	1 1/2 in.
22	8	" Blocks	"	3	1 1/4	3/8	Glue on
23	8	"	"	"	3	"	"
24	8	"	"	2	1 1/4	"	"
25	8	"	"	"	3	"	"
26	2	Lower rails, gable	"	10 1/4	10 1/2	3/4	Glue on Rabbit, Sand 2 sides
27	2	Top	"	"	2	"	"
28	2	Door fronts	"	19 1/2	1 1/4	"	Glue on cleats, Sand 2 sides
29	2	" " Overlays	"	18 1/2	3	3/8	Sand, glue on overlays. Band saw
30	4	" " Sides	Bir.	11 1/4	4	3/8	Groove, glue on overlays. Band saw
31	2	" " BKs	"	14 1/2	3 1/4	3/8	Sand, glue on overlays. Band saw
32	2	" " Bottoms 3ply	"	"	1 1/4	3/8	"
33	3	" " Guides	"	9 1/2	3/4	1/2	"
34	2	BK Stiles	Wal.	48	2 1/2	3/8	Groove, glue on overlays. Sand 1 side
35	1	Top Rail	"	36	2	"	"
36	1	Bottom Rail 3ply	Wal.	36	10 1/2	3/8	Groove, glue on overlays. Sand 2 sides
37	1	" Mull	"	36 1/2	4	"	"
38	2	BK Turned 3ply	"	16 1/2	1 1/2	3/8	Sand 1 side
39	4	Door glass strips	"	34 1/2	3/4	1/4	Groove, glue on overlays. Sand 1 side
40	4	"	"	16 1/2	"	"	"
41	4	Gable	"	36 1/2	1 1/2	"	Mould
42	4	"	"	10 1/2	"	"	"
43	4	Shelves	"	41	10 1/2	3/8	Groove, glue on overlays. Sand 1 side
44	1	Door astragal	"	40	3/4	1/4	"
45	2	Chair backs 13th	Bir.	6	2	3/4	1 1/2 in. bands
46	8	Overlays	Wal.	"	"	3/8	1 1/2 in. bands
47	2	Dices	Bir.	44	1 1/2	3/4	1 1/2 in. bands

in preference to thin ply stock, which is very liable to warp and twist.

On all stock marked "dowel and rabbit," the boring for the dowels should be done first. The rabbeting may then be done with a dado saw.

The shoulder lengths are exactly one half inch less than the width of the glass, the full length being one eighth inch longer than the width of the glass. This makes sufficient allowance for the variations in the width of the glass.

All sizes given on the stock list are finished sizes and, as there is considerable information attached, the bill should be clear to any one who is interested.

The inside shelves rest on small brass angle brackets and have a shallow cove run on the top side near the back edge, so that the plates may rest securely.

Double diamond glass is the most suitable and should be used if at all possible. The face of the glass is one-quarter of an inch from the surface of the doors and gables.

To give the cabinet a pleasing appearance, handles of the proper design and hinges finished in old brass should be used.

Live Industry on the Coast

Motoring on the road to Port Coquitlam from New Westminster, B.C., you will observe the sign of the Laminated Materials Company which stands out very distinctly in black and white some distance back from the highway. The plant of the company is housed in the building originally constructed by the Dominion Match Company some years ago. Here waste materials are turned into valuable products.

The Laminated Materials Company hails from Boston, and they have a patent on their method of producing three-ply veneer stock suitable for various purposes. Before they started up in British Columbia farmers along the Fraser used to let their cottonwood trees die of old age. When they got an offer to have the trees taken away they jumped at it, for they did not reckon that the cottonwood was any good for firewood, being very soft, and certainly it was not of use for lumber purposes. It was just the right kind of wood, though, to manufacture into panels as large as forty-two inches by sixty-six inches, and the finished article was as pliable as a sheet of metal, waterproof and very strong.

Wholesalers in Vancouver soon discovered that this material was just the thing for tea boxes and such containers that called for light, inexpensive stock, yet strong enough to stand wear, and the company has been supplying these in large quantities, though that was not their original intention. The fact that boxes of this kind are being manufactured suggests many ways in which this laminated material can be utilized, though what the company goes in principally for is to supply the wood. The demand has been so great that most of the cottonwood along the Fraser has been used, and spruce is now being worked in. The spruce panels are not so pliable as the cottonwood, but they are excellent for the purposes for which they are intended. The finished product is very suitable for inside finishing, such as beaver board is used for, and is more desirable by reason of its beautiful grain.

Are Looking for Export Orders

There has been little activity in the linseed oil market, prices at the mills ranging at about \$1.55 per gallon, with the usual difference for boiled and double boiled oil, and advances for smaller quantities than car lots. This is a period of waiting in nearly every market, and the same is true of linseed oil, there is little demand, and manufacturers are doing practically nothing to encourage this, as they believe that if there were really an urgent demand, trading would naturally increase. Hence they are loath to even cut prices and are simply waiting. Some oil is reported sold abroad, which looks promising, as in the past it has been impossible to secure the necessary export licenses. Now, however, there is no reason, if there is a demand from the other side, why export orders cannot be filled.

Do not forget that sharp-cornered gullets in saws are productive of cracks. It makes no difference if the saw is extra-heavy gauge and the material being sawed is softwood, cracks will appear sooner or later. Saw gullets should be rounded out with a good free-cutting emery wheel and kept that way.

The Proper Guarding of Circular Saws

Too Much Attention Cannot be Paid to the Guarding of the Circular Saw—
Carelessness Should Never Be Tolerated

Of all the machines used in the modern woodwork-ing plant there are none that run more continuously or do a greater variety of work than the circular saw, and there are few that cause so many accidents.

Nine times out of ten, when you see a man with the "woodworker's trade mark," and ask him "how he lost it," the reply is "on a circular saw." That being

tion of the saw which is below the table should be fully covered. This cover may be hinged so that it can be swung clear for the purpose of changing saws.

Kick-back Must be Avoided

In the case of rip saws a splitter, or riving knife should be fastened close to the back of the saw. This will tend to prevent the stock binding as it leaves the saw, and being thrown back at the operator. Many painful and, at times, fatal accidents, have occurred through "kick-back." In a great many cases a special device is used to prevent this form of mishap.

A Simple and Effective Guard

The guard shown in the accompanying illustrations is of very simple design, is easy to make and attach, and is so compact that it does not interfere with the operation of the machine. It protects the point of operation and covers the saw, and is so designed that where it is used all danger from "kick-backs" is done away with. It automatically adjusts itself to all thicknesses of stock while the back edge forms a splitter or spreader.

Where a power-feed rip is used the feed rolls should be fully covered.

Guarding the Swing Cut Off

The swing cut-off presents a few little problems of its own. All belts and pulleys should be fully protected. The hood or guard should cover at least one-



A good rip saw guard.

the case it is needless to say that too much attention cannot be given to the guarding of this most useful and dangerous tool. While it may not be possible to wholly eliminate all accidents, yet through the use of suitable safeguards, and the exercise of a certain amount of care by the workman, the danger can be reduced to a very negligible quantity.

In devising suitable safety devices for a saw there are a number of vital points to consider. The designs of the different guards must be such that, while the workman is fully protected against accidents, the guards used must not be so cumbersome or awkward as to reduce the output of the machine. The adjustments, to suite the different classes of work, must be readily and easily made.

Many Different Guards Used

There are a large number of different designs and styles. Some are hung from above, while others are carried by an arm securely fastened to the frame of the machine. Still others are fastened securely to a plate behind the saw. They all serve the same purpose, that is, to guard the point of operation and that part of the saw that runs above the table.

In all cases they must be designed so that they can be readily adjusted to suit the different classes of work. If the guards are too clumsy or the adjustments hard to make, there will be a tendency on the part of the operator to lay the guard to one side and use the unguarded saw. This is something that should be closely watched. Where it is necessary that the operator should see the cutting edge a device of open construction should be used. In every case that por-



How it prevents kickbacks.

half of the saw. A hinged lip-guard should be provided wherever possible.

Special attention must be paid to the counter-weight and its support. Where a swing bar is used, it is better if the bar works from a position slightly above the horizontal upward, thus lessening the danger of the weight dropping should it become loose. Some firms provide a safety chain which they attach to the bar and weight. This will carry the weight and prevent it dropping. A positive stop to prevent the

saw swinging out past the table, is another safeguard that should not be overlooked.

Other Precautions to Observe

In addition to mechanical guards there are a few simple precautions that should be rigidly observed, the most important being that all guards must be used at all times. The saw table should be kept free from blocks and edgings. Stock and waste should never be allowed to accumulate on the floor around the machine. All belts to be fully covered and all moving parts suitably protected.

The foreman should fully instruct new men in the use of circular saws, pointing out particularly the most common dangers. He should see that at all times both the skilled and unskilled workman should exercise due care when using the saw.

Use Your Trade Papers

Did you ever stop to think what a tremendous power for good your trade paper could be to you and your fellow manufacturers if every subscriber would use it to the best advantage—if they would only send in their views, ideas and suggestions as they occur to them and ask for information when needed? Suppose that you for one just try it. You will be surprised to see how much more interested you will be in your own business and the various problems connected with it.

Multiply this by the thousands of subscribers of our own paper, and the tremendous benefits that would result would surprise even the most enthusiastic. No one should hesitate about sending in a good idea from the spirit of selfishness, for where he might be giving away one idea he would be receiving hundreds in return. While it is undoubtedly true that we all are working for the "Almighty Dollar" the best way to secure it is to co-operate in the upbuilding of the trade at large, and co-operation is most valuable in this respect.

Buying New Machines

When a man goes to buy new machines for his plant he should not let the purchase dollar blind him to earning capacity. Generally speaking, the best bargain in a machine is obtained through buying the very latest model that is out for doing the work you want to do. It will likely involve a comparatively high first cost, and include individual motor, ball or roller bearings—things to lessen power consumption—as well as the latest devices to insure quality and to obtain capacity. These add to the cost, but they add so much more to the earning capacity that they generally prove worth while.

Now and then it falls out that a man can find in stock somewhere a type of machine which just fits in with his needs and can be bought at a bargain. That is simply a streak of luck which does come sometimes to help out. But as a general proposition shopping around for cheaper machines is poor business. The thing to look for is better machines.

With machines as with tools the quality remains long after the price is forgotten.—Wood Turning.

Never cut a profit needlessly. It is hard enough to make the business pay without wasting any of the net.

War Experience Helpful

The Foster, Merriam & Company, manufacturers of period hardware, casters and cabinet hardware entered whole heartedly into the task of helping the Allies beat the Hun. Their reserves, equipment and experience were at the disposal of the allied governments. When the armistice was signed they were on a 100 per cent. war basis.

Previous to the advent of the United States into the war, they were manufacturing scabbards for the English Government. On the entrance of the States and the adoption of the Enfield rifle, they received orders to proceed with the manufacture of Enfield bayonet scabbards for the U. S. Government.

The first hand grenade casting and the preliminary experiments on hand grenades for the trench warfare section were made at their plant. They also made the first 6 in. trench mortar shell that was made and fired in the U. S.

They suggested the development of gas mask hardware from a die casting to a stamped metal basis and later on carried out the stamped brass programme for gas masks. The change from die castings to stamped metal parts decreased the resistance to breathing 400 per cent., in this way materially increasing the effectiveness of the soldiers who were forced to use the masks.

In addition to scabbards and masks they manufactured the following items—buckles, aeroplane parts, piston rings for aeroplane, truck and tractor engines.

The lessons learned in the production and development of this large amount of material has been invaluable to them. They are now busy applying this training, in standardization and quantity production of goods to a definite and fixed standard, to their regular lines of casters, hardware and kindred lines. They feel that the experience and training thus gained will work out to the benefit of the user of their lines.

Study Men

Some men have within them that which always spurs them on, while some need artificial initiative, outside encouragement.

Some men extend themselves under stern discipline; some respond only to a gentle rein.

Some men need driving; some coaxing. Some need the spur; some the sugar lump.

Some men do their best with work piled shoulder high; some must have it given them a piece at a time.

Some men thrive on discouragement; some cannot work without cheerfulness.

Study men—the men over you under you, around you.

Study them and learn how to get from each the most that is in him.

The Price Cutting Evil

Obviously, the price cutter is the greatest danger in this connection. We do not mean that quotations should be maintained by artificial means, or that extravagant prices should be imposed. The Trade knows to what we refer when we suggest that great harm has been done in the past by senseless slaughtering of prices. The harm has extended to workmen, wholesalers, retailers, and the public. Cannot an attempt be made in the New Year, when all the furniture factories will return to pre-war activities to better their condition all around.

The Future of American Walnut*

Probably no wood used in the veneer and cabinet trades occupies a more interesting position than American walnut. Conceded to be probably the finest domestic hardwood, with a list of qualities that give it exclusive application in many important lines, the question of supply is the only thing that needs to be answered in order to insure continued demand and consumption in furniture and other cabinet industries on a large and increasing scale.

The war was at once an advantage and a disadvantage for walnut. Its domestic position was established and enlarged during the period early in the war, when Circassian walnut importations ceased and consumers were looking around for another fancy wood with which to take its place. Manufacturers of walnut lumber and veneers realizing that since foreign trade would necessarily be at a low ebb during the conflict on the other side, saw the advisability of acquainting consumers in America with the fact that the supply was adequate for commercial needs, and that the bugaboo that walnut had vanished might be disregarded.

Conditions were exactly right for such a campaign, and in a comparatively short time walnut had not only established itself on a firm basis in the furniture trade, but many of the leading manufacturers had given it precedence over all other materials, not even mahogany being allowed to hold first position.

It is an interesting fact that the stability of walnut, its resistance to atmospheric changes, its workability, its refusal to shrink or warp or otherwise "act up," not only make it the ideal material for the cabinetmaker, but also give it particular value in the manufacture of gunstocks and parts for airships. Other materials were offered and urged upon the Government as suitable for various purposes for which walnut had been specified, but walnut continued to be given first place in all work of this character. Probably no other wood was ever given the indorsement accorded walnut by the Government, which preferred to pay the top of the market and to absorb the necessary loss due to dimension manufacture of gunstocks, propeller blades, etc., rather than to take other woods which were not known to be entirely adapted for the work in hand.

The continued consumption of walnut on this tremendous war scale gave a good many people a feeling that the supply could not possibly last. The question was raised as to whether post-bellum needs in this fine wood could continue to be taken care of. That the situation is entirely favorable is shown by the fact that furniture manufacturers are continuing to supply the trade, and are encouraging dealers to stock walnut and push it. It would be disastrous to give so much prominence to a material which could not be furnished right along, and the attitude of the manufacturers who are making lines of walnut furniture is that they will be able to get all that they need.

Walnut lines at the furniture shows are as prominent as ever, so that it is fair to assume that any question regarding the supply has been solved in the affirmative, and that furniture makers are convinced that the walnut market will continue in a favorable position with reference to supply. It may be taken for granted, then, that the consumer of walnut, who may

have doubted the ability of the country to maintain an adequate supply, need have no fears on this point, but may plan to buy and use walnut to whatever extent his requirements may indicate.

In fact, the American Walnut Manufacturers' Association, which has been organized since the end of the war came in sight, for the purpose of keeping before the consuming industries and the public the facts concerning walnut as a material and the available supply, insists that the visible supply is probably 1,000,000,000 feet. The qualification of the amount is proper, since it is almost impossible to indicate statistically the available supply of this wood. The higher prices at which walnut is selling have automatically increased the supply, since it is well known that much material which is difficult of access can be marketed at a high price which would be altogether unavailable at a lower price, one which is insufficient to pay the cost of felling the trees and transporting the logs.

Before the war needs developed on such a huge scale, and when the walnut trade was made up largely of export shipments, the annual production was estimated at somewhere in the neighborhood of 50,000,000 feet. The late H. A. McCowen, who probably knew more about walnut supply and the walnut situation generally than anybody else in the country, told the writer on more than one occasion that the production probably ran under this figure, and while he had no doubt of the permanence of the supply, he was hardly prepared for the expansion which the war situation developed.

Now that the war is over, it may be suggested, these extraordinary conditions no longer prevail, and that it will be as hard as heretofore to get the material. But walnut prices will hardly come down, for the present demand will sustain any reasonable figures that may be fixed as a basis for walnut timber values. There will be every incentive for the owner of the timber, as for the exploiter of the logs and the manufacturer of the lumber, to help maintain the supply, since the continuance of favorable conditions demands an adequate and continuous movement to the consumer. When consumers find it difficult to satisfy their needs, walnut will be dropped, and the market will be non-existent. But that that day will come any time in the next few generations does not seem likely.

Advertising

This year promises to be a big one advertising. It is a time of readjustment, of turning back to peaceful ways and of seeking of trade wherever trade may be found. One of the recognized and leading means for extending trade and finding new customers is through the use of advertising space in periodical publications, and it is this means which promises to be extensively used throughout the year. Some of the effort will be directed abroad to enlarge the export trade, and it is this that there seems to be most talk about. But, while this counts, it is the home trade that furnishes the big field for effort and promises the most returns. And the home field in wood working lines should readily be made to yield good returns for advertising investment properly handled.

*Extract from an article by G. D. Crain, Jr., in Veneers.

Hardwood Inspection Rules and Sales Code

The American Hardwood Manufacturers Association at their recent annual meeting decided to adopt new inspection rules, to cover the grading of the hardwood they manufacture, to be scientifically based on the consumers' needs.

The co-operation of consumers of lumber is earnestly invited in the matter of making scientific rules which will break up the pernicious habit of grade manipulation.

The Association says in part: It is our purpose to work out this inspection rules problem on a truly scientific basis, constructing the grades as nearly as it is possible to do so with a view of answering the specific requirements of the use to which the lumber is to be put, with the minimum waste. Naturally this work is going to require time and the sincere interest and co-operation of the consumer is absolutely essential to the proper solution of the problem.

Following is a copy of the sales code as formally adopted:

Terms, regulations and inspection rules were adopted by the American Hardwood Manufacturers' Association on February 1, 1919, and are known as the "Inspection Rules and Sales Code of the American Hardwood Manufacturers' Association."

Sales Code.

1. All quotations are made subject to prior sale, immediate acceptance, and change without notice.

Orders—Contracts—Acknowledgements.

2. All orders or contracts should be submitted to the home office of the seller, in writing, but whether in writing or otherwise they shall not be considered binding until accepted by the seller in writing from his home office. Such acceptance or acknowledgement of orders shall state fully and in detail the seller's understanding of the transaction, and omissions, errors or misunderstandings should be corrected by purchaser by return mail.

Delivered Price—Freight Rates—Switching Charges—Government Tax or Duty—Damage, Etc.

3. The delivered price (f.o.b. destination) includes only the usual freight charges to point of delivery mentioned, based upon published freight rates in effect at time of quotation; switching or other terminal charges at destination, any advance in freight rates, and any tax or duty assessed by the government on freight or the goods, to be borne by the buyer.

The seller does not guarantee safe delivery, nor insure against breakage, loss or damage to material while in transit.

Invoices.

4. Promptly upon acceptance of shipment by initial line of railroad, the seller shall mail to the purchaser an invoice giving full information in connection with shipment, and in all instances bearing date coincident with date of bill of lading. Omissions, clerical errors, etc., subject to correction.

Terms of Payment.

5. Prompt payment for each shipment is a substantial requirement of each transaction. Freight due upon arrival of shipment at destination to be paid by the purchaser; original expense bill (or certified copy thereof) to be sent promptly to the seller.

A discount of two per cent. will be allowed upon cash payment of ninety per cent. of invoice, less esti-

mated freight, on receipt of invoice; balance to be remitted upon receipt and inspection of lumber.

Or a discount of one per cent. will be allowed for settlement by trade acceptance, due thirty days from date of invoice for ninety per cent. of invoice, less estimated freight; balance to be remitted upon receipt and inspection of lumber.

Or settlement by trade acceptance, due ninety days from date of invoice for ninety per cent. of invoice, less estimated freight; balance to be remitted net upon receipt and inspection of lumber.

No discount allowed on freight, whether or not prepaid.

All cash payments to be made in funds at par in federal reserve bank region in which seller is located.

General Contingent Clause.

6. Quotations are based upon and orders and contracts accepted under a "general contingency clause," which recognizes that in case of strikes, floods, fires, epidemics, inability to secure cars, delays of carrier, or any other causes whatsoever beyond the control of the seller, shipments and deliveries may be delayed until such causes and their effects have been removed.

Reinspection or Remeasurement.

7. In the event of complaint by the purchaser on the quality or inspection of material shipped, purchaser shall pay freight, unload shipment and hold rejected or disputed material intact, properly protected, and shall file complaint with seller within five days from receipt of shipment. If complaint is on measurement, or both inspection and measurement, the entire contents of car must be held intact. Payment of freight or invoice shall not be considered as an acceptance of the shipment, nor shall such payment work a forfeiture of the right to enter complaint and have adjustment of same.

Upon receipt of complaint from the purchaser, the seller shall immediately request the American Hardwood Manufacturers' Association to provide reinspection or remeasurement, as the case may be, by one of its licensed inspectors, according to the inspection rules of that Association, in effect at the time shipment in question was made. The purchaser shall lend all reasonable assistance to facilitate the reinspection or remeasurement.

Certificates to be issued by the said association, showing the name of the seller and purchaser, and the results of the reinspection or remeasurement; the original to be mailed to the seller, the duplicate to the purchaser.

In the event either the purchaser or the seller is not satisfied with the result of a reinspection he shall have the right to demand that a reinspection be made by the chief inspector. All requests for a reinspection by the chief inspector must be made within five days from the receipt of the inspection certificate.

Settlement Based on Reinspection or Remeasurement

8. Such reinspection or measurement, when had, shall be final and be binding upon both seller and purchaser.

The purchaser shall accept all material of the grade and kind purchased, and all of the next lower grade not in excess of five per cent. of the total quantity invoiced, and shall pay for said degrade at current proportionate price. All degrades in excess of five per cent. shall be the property of the seller.

Folding Chairs and Tables Can Be Marketed Overseas

The attention of nearly every line of industry in Canada is being focussed on the possibilities of the export trade. This is one of the largest problems looming up for consideration. Already a letter has been sent out by the Premier of Ontario calling the lumbermen of the province together to take steps on the proposal to send a representative to Great Britain in order to impress upon the industrial reconstruction leaders the merits of Ontario products of the forest and to lay before the proper authorities the kinds of wood that can be furnished, the quantities, sizes, etc.

It is pointed out that there will be a large market for forest offerings. It is also highly important that active steps should be taken to canvass thoroughly the situation. Thus will the natural resources and manufacturing facilities of all the nine provinces be placed before the allied countries. Concrete definite data is what is required and not mere theory or speculation. Before the outbreak of the war there was a large export business done in certain lines of furniture which has naturally fallen off during the past few years by reason of the lack of shipping facilities, the shortage of labor, the scarcity of certain raw materials, and the fact that war-weary Europeans are not purchasing any thing in the way of expensive household equipment.



No. 1. Folding Chair

The Department of Trade and Commerce at Ottawa is directing every effort to present all the openings occurring abroad to producers in the various lines so that Canadians may take full advantage of the situation. Just at present there appears to be a good field for Canadian manufacturers in folding chairs and tables which can secure a firm foothold in the British market. There are many different types of chairs which find a ready sale in the Old Country, but the accompanying illustrations afford definite ideas of some lines in demand. During the war the importation of these goods was prohibited, but now that embargoes on all lines are being raised, it is well for the prospective exporters to be on the alert and watch every opening presenting itself. If samples of different lines

are forwarded at once and firms are in a position to begin exporting the moment shipping regulations are relaxed, it will be going a long step in the direction of fostering a satisfactory market abroad.

Norman D. Johnston, Canadian Trade Commissioner at Bristol, England, states that if any Canadian manufacturers for export will communicate with him to furnish any additional information or to put the Canadian firms in touch with those who will be likely interested in their products. A steady reliable connection may thus be established. A recent issue of the Weekly Bulletin contains the following relating directly to the market for folding tables and chairs in Great Britain.



Another type of folding chair

In all cases the retail prices at which these articles sold before the war are given. In order to arrive at the manufacturers' and wholesale prices, the manufacturer, before the war, gave to the wholesaler a discount of 33 1/3 per cent. plus 10 per cent. with the addition of a cash discount of 5 per cent., while the wholesaler allowed the retailer a discount of 33 1/3 per cent. off the retail prices.

No 1 folding chair, with perforated seat, was made of hardwood and tested to carry 520 pounds deadweight. The seat is 14 inches by 14 inches, and the whole chair measures in length when folded 36 inches. They were sold in four grades, plain 3s. 11d. (95 cents), varnished 4s. 4d. (\$1.05), best varnished 4s. 7d. (\$1.11), stained best varnished 4s. 10d. (\$1.18).

As an indication of the large quantities of these chairs which have been sold in the United Kingdom it may be mentioned that they have been supplied to the Royal Agricultural Society of England (catering department), the Royal Lancashire Agricultural Society (catering department), Royal Leinster Society (Balls Bridge), Dublin, Y.M.C.A. (for use in camps), Bingham Institute, Cirencester, Redcar Pleasure Gardens, Welsh Mission (for use in marques), besides many thousands of camps, catering and mission rooms throughout the United Kingdom.

Eliminate Trouble With Sliding Drawers

To make bureau drawers and other wood surfaces slide easier, add a tablespoonful of powdered graphite to a pint of shellac varnish; stir well to mix, and apply with a brush; dry 4 to 10 hours before using. One coat is usually enough.

How Minor Troubles Have Been Conquered

It is the Little Things That Give the Most Trouble, Yet How Simple the Solution Often is—Yours May be Among the Following

By R. N. Y.

In a plant where I worked some time ago considerable trouble was experienced with the vibration of a band resaw. As the location of the saw made it impossible to build up a stone or concrete foundation, the foreman was at a loss as to what to do. The millwright from a neighboring plant came over and, observing the vibration, asked the foreman why he did not secure a sheet of lead and place it between the machine base and flooring, as this would overcome the trouble. The foreman did as suggested, procured a sheet of lead about 1/8 in. thick, and laid this on the floor and set the machine on top. This reduced the vibration when this saw was running to such an extent that no more trouble was experienced.

In another factory where a goodly proportion of the machine equipment was located on the first floor, such as saws, jointers, mortisers, tenoners and scroll saw, the vibration from machinery and shafting below was so great that it would make the operation of some of the first floor machines a difficult matter. A thick sheet of felt the size of the bed of each machine was obtained and laid under each machine, with the result that, while the vibration still existed in the floor, it was reduced to such an extent that it was hardly noticeable. In fact some of the machinery upstairs operated with less vibration than those below, which had solid foundations.

How to Make Waterproof Glue

In one factory which manufactured toys as a side line, several designs of boats and submarines were turned out. To turn these required solid, thick stock, for if they were built up and glued together the water would dissolve the glue and ruin them. It was found that, if this objection could be overcome, much stock, considered as waste, could be worked up into these toys. An attempt was made with waterproof glue, but the price of this material was so high that it made the use of the glue unprofitable. After some experimenting with home-made solutions, a kind of glue, or rather cement, which proved to be both waterproof and fireproof, was made by mixing quick lime and linseed oil in the following proportions: A handful of quicklime with four ounces of linseed oil, thoroughly leach the mixture, then boil until quite thick, and spread on tin plates. This will become very hard, but can be dissolved in a glue cooker and used like ordinary glue. This was not glue at all, but a kind of waterproof cement that is extremely tenacious, and proved entirely satisfactory. By this means the manufacturer was not only enabled to cut the cost of his toys down to half through using scrap material, but by thinning this solution down to the consistency of paint, and adding coloring material, he was enabled to give his toys a durable protection against water at less cost than it would have cost him had he used ordinary paint.

In one finishing room I observed a finisher dipping his fingers in a light green solution. When asked regarding it, was informed that that was the only way he could keep his hands free from stain. The solution is made as follows: Take 1 ounce of white wax, cut

into shreds, and place it in a jar standing in boiling water, when the wax is melted, add about an equal amount of olive oil, and after mixing the solution is allowed to cool. The fingers should be dipped into the mixture when it is nearly cold; this will form a thin layer of wax on the fingers and will prevent the absorption of the chemicals and stains by the skin.

An Etched Finish is Often Desirable

Toy or novelty factories have often produced small lots of novelties of a high grade, having the effect or appearance of etched wood. This can be easily accomplished and a whole array of etched wooden novelties may be cheaply produced.

The wood is first coated with a solution of concentrated sulphuric acid, and left that way for from four to six hours. In this way the soft, annular rings of the wood are eaten out by the acid, leaving the hard rings or grains in its natural form. The sulphuric acid is now washed off with water, and the wood scrubbed with a stiff brush. Thus treated the wood will show a beautiful etched appearance and can be stained after the surface has been bleached with chloride of lime or oxalic acid.

To Prevent Veneers Loosening at Edges

A woodworking plant making a specialty of turning out veneered doors, had considerable trouble, from time to time, through some of their customers exposing the doors to moisture. This resulted in loose veneers, and a complaint to the manufacturer: After trying the experiment of painting the edges it was found that this did not fill the bill in all cases. A glue salesman, who happened along, advised the painting of the edges of the doors with a solution of bichromate of potash. This would waterproof the glue and prevent access of moisture to the interior. Since treating his doors with this solution, this manufacturer has had no more trouble or complaints from his trade, though his product is often neglected and left where it could absorb moisture.

Number of Accidents Shows Big Increase

In the fourth year of the operation of the Ontario Workmen's Compensation Act, just closed, the number of accidents and the amount of compensation awarded considerably exceeded the figures during the previous year. The number of accidents reported during 1918 was 47,848. The amount of compensation awarded was \$3,514,648.47. The number of accidents reported during 1917 was 36,514. The amount of compensation awarded was \$2,913,085.81. Of the total of 47,848 accidents, 440 were fatal.

A notable feature of the accident calendar for 1918 was the exceptionally large number of railway accidents during the early part of the year, largely owing to the very severe winter weather.

A large part of the increase in the amount of compensation is accounted for by the increased wages, the general principle of the act being that the workman receives 55 per cent. of lost wages.



M. E. Cummings
Canadian Representative for Mowbray & Robinson and Geo. C. Brown & Co.



A. R. McDiarmid
of McDiarmid & Clark, elected Mayor of Brandon, Man.

Canadian Representative Appointed

Messrs. Geo. C. Brown & Co., Memphis, Tenn., have recently concluded arrangements with Mr. M. E. Cummings, 814 Richmond Avenue, Buffalo, N. Y., to act as their Canadian representative. Mr. Cummings has been handling the stock of the Mowbray & Robinson Co., of Cincinnati, Ohio, and will continue the selling of this line as well as the stock of the Geo. C. Brown & Co., who specialize on St. Francis Basin red gum and Kraetzer-cured sap gum. Mr. Cummings is widely known in Ontario, as a splendid lumberman, and will now have a still wider range of hardwoods with which to take care of his customers.

The Newly Elected Mayor of Brandon

A. R. McDiarmid, who was recently elected Mayor of Brandon on the business men's ticket, is a member of the firm of McDiarmid and Clark Ltd. This firm not only run a large sash and door factory, but conduct a retail lumber yard as well and have succeeded in building up a large business during the last few years. Mr. McDiarmid headed the polls, winning by a large majority.

Watch Carefully all Waste Stock

(By "Conserver")

In these times of high priced lumber it would be well for every woodworking factory to pay strict attention to the conservation of every piece of scrap or cutting in the mill. It is not only necessary to utilize the scraps, but care should be observed in getting out the stuff so that there will be as little waste as possible.

The waste in some mills is enormous. One illustration of this that came under the writer's personal observation may be quoted as a sample. Some three-eighths solid oak panels were required for some veneered doors and instead of the firm stocking these panels

in the required or approximate thickness, it was the custom of the man whose duty it was to fit them in the door, to go to the lumber rack and pick out the finest figured oak he could find. This material was often seven-eighths thick, and to take it down to the proper thickness, the man run it through the planer until it was three-eighths thick. What a waste of good material this was. It was a shame for both the firm and the employee.

The above case was a flagrant one of waste and merely demonstrates the unbusinesslike methods employed in their factory. While the majority of mill rooms work a little closer than this, there is room for a great deal of saving in most of them.

When material is got out in the rough and made ready for jointing, it is surprising the latitude that is allowed in thickness in regard to the finished gauge. This is particularly true in those factories that have not adopted the tongue and groove joints.

When the "rough gluer" takes hold of the stock to do his operation he is not always particular whether the various pieces project a quarter, yes and some times half an inch above each other. He is supposed to keep one side flush at any rate, but in the excitement of getting the stock under pressure, he often neglects this. The machine man being a friend of his says nothing about it, the results are extra work, besides enormous wastage.

Stock Should Be Tongue and Grooved.

When the stock is tongued and grooved the material can be faced first and planed easily to the required thickness. Then when it is glued up the tongues prevent the glue joints from springing before the pressure is applied. This method saves time and material and soon pays for the amount spent on the tongue and groover or matcher.

In sawing up stock a certain amount of waste is unavoidable even in the best lumber. It is then up to the management to study the best way to utilize these short ends and cuttings. A concrete case is known

where the short ends are used to advantage. This factory has occasion to make stock about three inches thick veneered with three-sixteenth veneer. The short ends are glue rubbed together on a flat piece of stock, another flat piece is glued over the small pieces forming a solid core. This is then veneered with the three-sixteenth veneer and makes a solid substantial board. When the small ends are of uniform thickness, this method entails but little labor and is much better than shovelling the pieces into the firehole.

An Energetic Eastern Manufacturer

One of the most widely known men connected with the woodworking industry in New Brunswick is Wm. S. Sutton, M.L.A., who is manager of the Woodstock Woodworking Company, Woodstock. Mr. Sutton has always been a public spirited citizen and was a member of the town council for two years. Later he occupied the mayor's chair for two terms, serving with credit to himself and satisfaction to the ratepayers. In September, 1916, Mr. Sutton was elected a member of the New Brunswick Legislature for the County of Carleton, in the Conservative interests. In the general election two years ago he was once more successful. Mr. Sutton has resided all his life in Woodstock, and the slogan of the Woodstock Woodworking Company is "We Can Sell in Competition with any firm in Canada." They have a well equipped plant and manufacture doors, sash, mouldings, flooring, school desks, church pews and building material of all kinds. They also carry large stocks of quartered oak, white pine, cypress, hard pine and other native woods and have developed a splendid business in interior trim and other allied lines.

Efficiency is a combination of hard work, high aim, strong purpose, dogged determination, resourcefulness, keen ambition, power of decision, tact, knowledge, mental grasp, and a multitude of other things.—Commerce Monthly.

Western Canada Trade Commissioner

L. B. Beale, Lumber Commissioner of B. C., to the British Isles, has been appointed British Trade Commissioner in Western Canada. He will have the territory from Winnipeg to the Pacific Coast under his jurisdiction, and will possibly make his headquarters in Winnipeg. Mr. Beale has been in London for a considerable period and his wide experience and thorough knowledge of the lumber industry well qualify him for the duties of his new post. Mr. Beale will return to Canada in February, and will spend some time in the office of G. T. Milne, H. M. Trade Commissioner, Montreal, and later will visit Toronto, where he will be associated with F. W. Field, H. M. Trade Commissioner, after which he will proceed to Winnipeg.

Do Your Boring Bits Follow the Grain

At our factory we have all kinds of light boring to do, and much of it is straight through end-wood—for example, the boring of wooden barrels for toy machine guns, and other work that requires straight, true holes of various lengths. I have often been asked how we manage to do so much of this boring without the usual trouble of having the bits leads to one side or the other, with the grain.

Our bits, when sharpened and fitted properly, always follow their true center without leading. Here is the secret: The bit point is what leads a boring bit off center, to follow the grain of wood, therefore the remedy is to remove the bit point. Grind or file it off, then sharpen the bit nicely, and if necessary swage it lightly and evenly for clearance, so that it can cut freely. If it is a long bit, there must be some sort of guide collar near its free end, to steady and guide it as it enters the work. This guide-collar should be arranged to retreat in line with the bit as the work advances, so it will not interfere with the boring operation.



Wm. S. Sutton, M.L.A.
Manager, Woodstock Woodworking Co.
Woodstock, N.B.



L. B. Beale
New British Trade Commissioner
Winnipeg, Man.

Canada Metal's Seventh Annual

The seventh annual convention of the Canada Metal Co., Ltd., Toronto, was held in Toronto, during the week beginning January 20th, and was a very gratifying success to all concerned.

W. G. Harris, Sr., opened with a few words of welcome in his usual cheery manner, and continuing said that year by year our business is growing and our sales staff increasing. Until a few years ago it was possible to call all our salesmen together frequently to discuss conditions, but now with branches in Hamilton, Montreal, Winnipeg and Vancouver, and each branch with its separate sales staff, it is impossible to meet more than one a year and at this meeting we can look over the past year's results and correct all errors of omission and commission and lay the foundation for future perfection.

Mr. Harris further stated that the Canada Metal Co., Ltd., stood for service plus quality, and it is only by maintaining these high standards that we can expect to maintain our supremacy in our particular line.

One of our leading financial houses recently sent out a circular broadcast which expresses my sentiments exactly, for I am a firm believer in Canada and its future. The reasons given for expecting a period of exceptional prosperity in the Dominion were as follows:

"The stage is set in Canada for a period of development the like of which has never been known in the history of the Dominion. The nation is building ships that will carry Canadian products to every country in the world. The steel industries are being equipped on a scale that should before long make Canada independent of imported supplies. The big consuming markets are becoming more dependent each year on Canada for pulp and paper supplies and this country is, physically, in a position to provide for the world's requirements indefinitely."

Mr. Harris, Jr., vice-president, presided and in going over the annual report of sales of each salesman, said, that it was most gratifying to see the progress made in 1918.

In 1917 the company's sales established a record, but 1918 was far ahead. Not only had the branches in Hamilton, Montreal, Winnipeg and Vancouver made considerable progress, but large business had been done with Australia, New Zealand, South Africa and other distant part of the British Colonies.

Our Convention, Mr. Harris, Jr., continued, will be devoted to going thoroughly into our various lines so that salesmen can gain a greater knowledge of the goods they are selling.

At noon each day, lunch was served at the Humber Bay Inn, and the trip along the Lake Shore made a most enjoyable break in the proceedings. Monday evening there was a smoking concert in the Convention Hall, and in addition to the salesmen, the office staff and the foremen of the various departments were present.

At the conclusion of the Convention, a hearty vote of thanks was accorded to Mr. Harris, Sr., Mr. Harris, Jr., and Mr. H. C. Crow for the excellent way in which everything had been prepared and carried out. In reply Mr. Crow stated he hoped that each salesman had gained a little more knowledge of the goods manufactured by the Canada Metal Co. and a few more pointers on why the firm maintained its supremacy in its particular lines, and also that they recognized the fact that all were anxious to see The Canada Metal salesmen

able to assist every one interested in the metal business with any difficulty which might arise and that the motto for each one be:

"We will be satisfied with nothing short of perfection."

Keep An Eye on the Core Stock

By A. Hudson

The condition of the core stock is also very important in veneering. With the use of thin face veneers, it has become more necessary than ever to pay special attention to the preparation of the core stock on which the veneer is to be glued, yet how careless some factories are regarding the surface of their core stock.

Many veneer men have come to regard the sander as indispensable in preparing core stock for veneering. Personally, it seems to me to be an expensive method of obtaining a clean, level surface. A planer in a factory should be capable of doing a planer's work, or should certainly be replaced. In any case, the core stock must be planed before sanding and is it in line with modern efficiency to use two machines in doing an operation which could be performed on one?

Is Tooothing Really Necessary.

Some manufacturers sand their core stock while others tooth it. The writer prefers tooothing the core stock to sanding it, but is it necessary to rough up a surface to make glue stick to it? There are plenty of good glue joints being made with veneers cut as smooth as the machine will make it and not a sand mark or even a scratch on it. There are also lots of edge joints made where the wood is as smooth as it is possible to make it, if that is so why rough up the wood to make the glue stick?

Care is Necessary in Crossbanding

One great fault in many factories is that crossbanding and face veneers are laid at the same time. For real good work crossbanding should be placed under pressure as soon after it touches the glue as possible. This prevents expansion. Care must be taken to see that it is thoroughly dry, also to see that it is laid right side up. It is a well-known fact that much sliced veneer is badly ruptured on one side and if laid with this side up these defects will in time show through the thin face veneer.

We all know that the veneering methods used by our forefathers are no longer applicable, in many respects, to the work of the present day. The efficient cutting, drying, matching, taping and even sanding, are operations that are constantly being improved.

It pays the manufacturer to purchase veneers that are suitable for his particular use, and after it reaches the factory to see that it receives the proper care, through every operation, so that the finished product will be of the highest quality that it is possible to produce.

Cost Accounting Department Initiated

The Furniture Manufacturers' Association have installed a cost accounting department. Mr. J. E. Ferguson, of Woodstock, Ont., being placed in charge. Mr. Ferguson has had many years of practical experience in this line of work, having been associated with several of the large furniture manufacturers. Latterly he has been in full charge of the cost accounting department of the Canada Furniture Manufacturers, Ltd., at Woodstock and other branches.

The Care of the Varnish Sprayer

By Chas. H. Green

In this article I wish to emphasize the care of the spray machine and also the necessity of a plan whereby material that now is wasted may be saved and made use of.

The heating of the air and material is a great problem and too much attention cannot be given to the regulating of the temperature. I have found that it is difficult to regulate the heat of the air and heat of the material with one heater. By using two heaters, one to heat the material and the other to heat the air, the temperature of one or the other may be varied and the results are more satisfactory.

Do not heat the material too high, not to a temperature much above that of the finishing room, or trouble will arise and the result will be poor finish.

Every Part Should Be Kept Clean.

In order to preserve the motors, and keep them running steadily, great care must be taken to keep the fans clean. A fan, the exact size of fans, should be made so that they can be immersed in a good varnish remover and thoroughly cleaned. An excellent preparation is made for this purpose by taking one gallon of wood alcohol, one gallon of benzole and four ounces of paraffin wax. Melt the wax and add the benzole, and lastly the alcohol.

This is a good solution in which to leave the gun in order to clean out all dirt, also for the cleaning of the liquid hose when it becomes dirty. The hose should not be left in the liquid for more than ten minutes.

All vent pipes from the hood should be cleaned weekly. The helper at the machine should clean and coat them with some crude oil to prevent the material sticking and to make cleaning easier.

In the staining room, the table on the hydraulic lift should be made in such a manner that all the waste stain will be retained on the platform. To accomplish this have a rim, half an inch high, made around the outer edge of the table. Then have a hole in the platform, and fit a plug in it, so that the surplus stain may be drawn off.

Golden oak stain, gathered in this manner can be washed off, thinned and used for the backs of cases, inside cupboards, etc. This effects a great saving in stain.

Before using the machine, for shellacing, the platform should be thoroughly cleaned. A frame, large enough to reach from above the fan to the floor, should be made and covered with cotton, and placed at the back part of the hood. This will catch a lot of gum. This gum, together with the scrapings off the platform, can be recut, with alcohol, and used again.

Saving Varnish and Enamel.*

When using for varnishing the platform should be thoroughly cleaned. Strips of tin, with a lip on the bottom edge, should be hung from all sides of the platform to catch all the varnish. These strips should be made of such a size that they fit nicely in a tank of benzoin specially made for this purpose. This will soften the varnish.

The strips can then be cleaned and the varnish taken off together with the varnish removed from the platform can be thinned and made use of in the mixing of surfaces for the inside of drawers.

In enamel work the same principles may be followed and all the primer and enamel can be cut with ben-

zole and made suitable for any interior case work, backs of bed head ends or cases.

Through the exercise of care and a little ingenuity a large proportion of the material, which at present goes to waste, may be saved and a use found for it.

Wood Preservers Hold Fifteenth Annual

The fifteenth annual convention of the American Wood Preservers Association was held in St. Louis, January 28-29. A large number of persons were present, and an intense interest was shown in the papers and reports that were read and the discussions that followed.

In delivering the address of welcome Mayor Henry W. Kiel said that he was "sick and tired" of hearing people declare that they were going to wait to build because prices were too high. He believed in high prices and said there was no chance for lower prices, because the cost of labor was unlikely to decrease.

Chicago was selected for the next meeting place.

An Interesting Booklet

The Canadian Woodworker has received an interesting booklet from "The National Dry Kiln Co., Indianapolis, entitled "Reconstruction." Labor-saving devices and greater efficiency will have a big part to play during the present reconstruction period. The National Dry Kiln Co.'s efficient and labor-saving method of handling and drying lumber will, therefore be of special interest at the present time.

Napco Waterproof Glue

Among the new products that are being advertised in this issue of the Canadian Woodworker is "Napco," a product of the Napco Corporation, of Indianapolis, Ind. Napco is a waterproof glue and can be mixed with cold water. In connection with this product the Napco Corporation have started an interesting monthly publication entitled "Napco News." Messrs. Robert Bury & Co., Toronto, have been appointed Canadian representatives for this product.

Conciliation Board at Stratford

In an attempt to settle the differences between the Stratford furniture manufacturers and their employees, it was agreed by mutual consent to ask for a conciliation board.

The board met recently in Stratford, with Judge D. McGibbon as chairman, and decided to send circulars to the furniture manufacturers of Ontario and Quebec, asking for detailed information as to the number of the employees, the number of years each has served at his or her trade, and the present hourly or weekly wage in each case.

This information must be handed to the board by some member of each of the firms consulted. To make it easier for the manufacturers to attend in person the Board will meet as follows: Hanover, February 18; Kitchener, February 20; and Montreal, February 25.

In this connection a meeting of the executive committee of the Furniture Manufacturers Association has been called for this week, as it is important that the figures supplied relative to the wages of employees should be classified clearly and correctly, and that every assistance should be given the Conciliation Board.

Upholstering and Trimming

The Curing and Working of Curled Hair

Description of the Different Operations Performed in the Sterilizing and Curling of Hair
—The Price of Hair Has Hardly Advanced Since 1915

Curled hair is used so extensively in upholstered furniture, mattresses and automobile upholstering that a short treatise, telling what it is and describing the method used in curing it, should prove very interesting.

Curled hair is the hair taken from the manes and tails of horses and the tails of cattle, and after being sorted and sterilized it is curled and cleaned. That is the form in which the upholsterer receives it.

The hair is imported from many parts of the world, coming from far off Siberia and South America, as well as Mexico and our own Canadian West. As it is gathered it is thoroughly washed and dried, then packed in large bales and sent to the curling plant in that state.

Thoroughly Cleaned and Sterilized

The first operation is one of cleaning and sterilization. The hair is placed in a huge tank filled with soda and other chemicals and allowed to soak for about twenty-four hours. It is then put in a large washery, where it is boiled for hours. The washery is fitted with a scrubber, in the form of a drum. This not only keeps the hair in motion, but thoroughly scrubs it, removing the last trace of animal matter and chemicals.

After coming from the washery it is placed in a kiln. The kiln is a large compartment with a raised floor, made of wire netting. The hair is placed on top of the netting, and a current of hot air is forced, by a huge fan, up through the hair, not only drying it but lightening and airing it as well.

It is Now Sorted for Color and Length

Sorting and grading is the next operation. This is done by hand. The hair is sorted for length and color and the hair from the manes, being softer and finer, is also picked out. The different grades are kept separate from now on, but are all treated alike except for color.

The colors are white, grey and dark. To insure a uniform color, the white hair is chemically treated and bleached, the dark hair is dyed black while the grey is left in its natural shade.

Spinning is an Interesting Operation.

From the sorting room it is taken to another department where it is spun into a small rope. Here the operators work with a basket, containing hair, strapped to their waists. They hook some hair on the end of a revolving spindle and walk backward, feeding the hair, out of the basket as they go. In this way they make a rope from sixty to one hundred feet long. They then pass this rope through a specially shaped horn, causing the rope to form a tightly curled spiral. It is this operation that imparts the curl to the hair.

The ropes are now taken and again placed in tanks

and boiled for eight to ten hours. This not only washes the hair but softens it so that it assumes the curled form we know so well. After leaving the tanks it is placed in another kiln and baked for twenty-four hours. By this time the curl should be well set. But to make sure that it will never straighten out it is piled away in rope form to thoroughly season and set and is left in this state until an order is received for it.

The Rope is Next Unwound.

Upon receipt of an order the rope is taken and hooked on spindles, which revolve in the opposite direction to those that the rope was made on. This tends to partly unwind the strands. They then go through a teaser which loosens them up some more, and lastly they are fed through a picker which thoroughly separates the hair, throwing it out in a fluffy, curly mass. From the picker it is taken and baled for shipment.

The whole process is such that the finished product is perfectly free from all animal matter, is sweet, and sterilized in the most up-to-date manner.

The chief attributes of curled hair are its great resiliency and its indestructibility. By indestructibility is meant that it apparently does not deteriorate with age. Hair that has been in use for years seems to be as light and springy as when it was new.

Another feature is that it can be readily renovated and made over. For this reason it is used extensively for mattresses and in the manufacture of railway coaches.

Probably the largest users of curled hair are the automobile manufacturers. Fully sixty per cent. of total output is taken for the upholstering of automobiles. The railway coach and furniture manufacturers take care of a large part of the remainder, it being used extensively in the upholstering of parlor and sleeping cars and in the better grades of upholstered furniture.

Another point that might be mentioned is that this is one of the few commodities, the price of which has not been greatly increased. With the exception of an advance of from five to ten per cent., on the best grades, the price of curled hair is the same as it was in 1914.

Alcohol from Swedish White Pine

Consul General Albert Halstead, writing from Stockholm, November 19th, says: "The County Syndicate Aktiebolag has petitioned the Swedish Government for permission to make 5,000,000 liters (1,321,000 gallons) of alcoholic spirit from white moss, of which there are enormous quantities available. The quality of such alcohol is said to be very good, and it costs less per liter than spirits made from grain or potatoes. It can be easily denatured.

"The petition proposes that the alcohol be manufactured under official supervision and that the Government be taken in as partner."

BAUER'S LIMITED

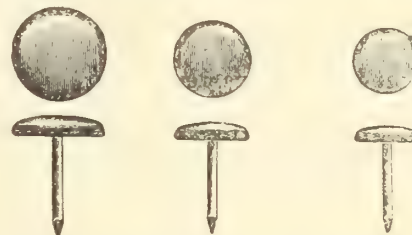
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Enameled to Imitate Leather

Made in the following standard colors:

Medium Green, Dark Green, Very
Dark Green, Tan, Light Maroon,
Dark Maroon, Black.

We manufacture all kinds of Cut Tacks, Small Cut Nails and Clinch Buttons. Especially catering to the furniture and upholstery trades. Send for samples and prices.

We can make prompt shipments from stock of any of the above products.

Dominion Tack & Nail Co.

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Furniture Leather

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We are making a specialty of cutting

Spanish Split Leather for Chair Manufacturers

Quotations and samples furnished on application.

We will be pleased to supply a very attractive sample book, of all our grades on application.

Grand Haven

-

-

-

Michigan

Curled Hair versus Springs

The following interesting letter was received from Messrs. Wilson & Co., of Chicago, dealers in Sterilized Curled Hair. This opens up a good field for discussion and the "Canadian Woodworker" would like to have other views.

Chicago, February, 6, 1919.

Editor, Canadian Woodworker:

Gentlemen.—We have read with interest your article on page 42, of the December, 1918, issue entitled "Advantage of Hair Spring Edge." We quote particularly your sixth paragraph as follows:

"A number of cushions were being made up. These consist of springs placed as close together as possible. They are first covered on all sides by a layer of stout canvas and then the inner and outside covering. This style of cushion is extremely resilient and holds its shape well."

We question your conclusion that this style of cushion is extremely resilient and holds its shape well. We believe you will find after a little research that no springs or metal device of any nature whatever can successfully displace Curled Hair as an upholstery filler.

Steel springs cannot absorb a shock; they are capable of movement in two directions only, namely up and down; moreover a steel spring is the most vindictive thing on earth and its vindictiveness is apparent when you strike, push or press it; it strikes back with automatic swiftness, the recoil being almost as strong as the force which first pressed it down or together.

Spring recoil is the diametric opposite of shock absorption, while curled hair, with its ten thousand miniature and perfect spiral coils to the cubic inch, is the one material capable of absorption of shocks or pressure from any and all directions.

Curled Hair is possessed of the three cardinal principles essential to a perfect upholstery filler, namely, soft contact, range of resiliency and self ventilation.

Springs or metal devices designed to eliminate the use of Curled Hair, however placed, covered or uncovered will eventually work their way through the covers, become uneven, topple over, collapse and in short present a wrecked appearance in a short time.

Moreover, springs cannot be so designed as to afford equal comfort to both light weight and heavy weight occupants of the seat—if made sufficiently sensitive to afford comfort to one of light avoirdupois, they will utterly collapse and afford a hard seat in their closed condition when occupied by a person of heavy weight; on the other hand a spring sufficiently stiff to sustain a heavy person, would be equally uncomfortable for a light person.

We look upon the cushion spring as an attempted short cut to comfort, and one that has failed utterly.

Very truly yours,

Wilson & Co.

Actual Losses.—Superintendents have stated in actual instances, that due to poor light their workmen have lost much time, sometimes as much as from one to two hours per day on certain days. If good light will add an average of say one-half an hour per day to the output, these 30 additional effective minutes represent an increase in output of 5 per cent., brought about through an expenditure equal to $\frac{1}{2}$ of 1 per cent. of the wages for improved lighting, or a saving equal to ten times the expense.

Some Market Notes

Very attractive prices are now being quoted on burlap, so much so that users are showing no hesitancy in stocking up for their needs for a considerable time into the future. Of course, the ending of the war has released a great deal of tonnage for commercial imports but as yet this has not affected the situation. For one thing the jute crop in India is short, and even when ships get running on something like a normal basis the production of jute does not warrant the belief that there will be an oversupply of this commodity in the next few months.

Manufacturers engaged on government contracts are being offered a substitute for burlap by a large Massachusetts mill which has discovered a material that can successfully be used for baling. Instead of 100 per cent. jute, the substitute is made of one strand of Swedish paper and two strands of jute. It is made 9 and 12 ounces in weight and 36, 40 and 48 inches deep. A government test of the 9 ounce product shows a tensile of 119 pounds, as against 90 pounds for regular 8 ounce burlap.

"Reports received from manufacturers of upholstery trimmings indicate that most of their goods are now being bought by working people. The reason for this seems to be that prior to the war many of these people could not afford to spend money for luxuries in home furnishings. Now that they are making more money, it is evident that they are spending it in this direction. A good instance of this was given in the case of two women who entered a department store recently. One of them bought several yards of decorative materials that amounted to \$50. Her friend doubted her being able to pay the price, but she was quickly informed by the woman who purchased the goods that her husband was making \$40 a week and that she could afford it.

The Ideal of Service

The ideals of truth and service have, for many years, been prominent in the world of advertising and selling. Only short-sighted persons still believe that to make a sale terminates a business relation. It is much more in harmony with the best practice to say that a sale begins a mutually profitable relation. Henry Ford once asked his agents to remember that they were not selling machines but transportation.

If this concept of a service relation be carried into the interpretation of the labor contract, it will be seen that, in reality, an employer "sells" his job to the employee. He "sells" him, or satisfies him, as to the wages, the working conditions, the task to be done and the policies of labor management in general. Then his problem is to keep him "sold."

But it should not be a mere job that is sold. A permanent relationship should be entered into—a relation of mutual aid and protection. To quote Mr. Ford again, "It is not a living but a life we are trying to provide for our workmen."

This ideal of service has led American business men to venture out constantly beyond what were once considered to be the boundaries of strict business. The surprise which has usually accompanied such ventures has been their profitableness. Where an employer has had faith, superior employees have gathered to him, and built up a permanent and enthusiastic force around him.



Practical Points for the Finisher

Some Pointed Suggestions on the Purchasing and Testing of Finishing Materials
—How Simple Tests May be Made

By Dixy Wells

In detailing the problem of wood finishes for furniture factory use, there are, of course, many vital and interesting points which must always be kept in mind by those who do the buying of paints and varnishes.

If these are bought by the finishing foreman he is more likely to get what is most needed, and what will produce the best results. If it is left to a general buyer, a purchasing agent, so to speak, this man should have a thorough knowledge of the requirements, the component parts and real functions of proper finishes. He must have information that will make the product purchased entirely acceptable and suitable, for, of course, the furniture manufacturer cannot expect a man to turn out satisfactory goods if finishes below quality are used, or if he foolishly insists upon a low price at the sacrifice of quality.

The "finishing touch of perfection" can never be given with goods which are adulterated and otherwise lack those qualities which make for a perfect finish. It is therefore very necessary that the finisher and the finishing foreman in particular, should have a thorough understanding of the goods he uses.

Orders should not go into the factory unless accompanied by complete samples for matching, and very definite information regarding the exact use to which the article so finished is to be put. The salesmen of the paint and varnish manufacturer can often be very helpful to the finisher, in fact some up-to-date firms are employing what they call a "service man," one whose principal function is not so much selling, as giving a service that will help the finisher to a better understanding of the goods and enable him to increase his own efficiency.

We mention goods which are adulterated, but you must remember that some adulterants are desirable. The principal adulterants are oils, like kerosene, cotton seed, rosin, corn oil, rosin oils, paraffine, etc. Some of these, however, like corn and cottonseed oil, can only be detected definitely through chemical analysis, but their presence may often be suspected, as in the case of rosin, by the length of time it takes the sample to dry, against a standard oil.

Simple Tests for Adulterated Oil

You must also take into consideration the consistency of the dried film. A very easy test to make and one productive of good results is as follows, and the only apparatus necessary is a common white china dish, and an ordinary glass stoppered bottle containing chemically pure concentrated sulphuric acid.

Take some of the oil which you have reason to suspect is adulterated, and pour a little into the white china dish. After this let one drop of acid drop in

the middle of the oil, and give particular attention to the shape and color this one drop of acid forms.

It is quite safe to assume that the suspected oil is pure if the spot forms a clean cut shape, like that of a begonia leaf, having a clear reddish brown color. However, if this spot shows a brownish yellow you may be satisfied that either corn or cotton seed oil has been used as an adulterant. If, however, the spot goes black, in nine cases out of ten china wood oil or fish oil, or rosin, or rosin oil has been used. If a drop of sulphuric acid forms a sort of blackish scum and spreads over all of the surface of the oil in the little white dish, you may be reasonably sure that kerosene, heavy naphtha or other mineral oils have been used.

There are also very simple methods by which the finisher can test his mineral and rosin oils. Take an ordinary glass strip about 4 x 10 inches and apply two coats of a good solid black to one side and let it thoroughly dry. After this, take some pure linseed oil, and to another portion add a little paraffine oil. Take these two oils and pour them on the unpainted side of the glass and let them flow. You will find that in the case of the pure oil it shows a brownish cast, while the oil which has been adulterated or "doped," a blue cast results. With the same test, rosin oil will show a sort of bluish green color. You see that many mineral oils contain a certain amount of blue color and are very easily shown up by this simple yet effective method of testing.

The user of paint materials should find the specific gravity by the use of a hydrometer. A point most desired by the average finisher is to keep his goods uniform; that is, the subsequent lots should match the first, and this last test gives him a pretty good line on this condition.

A Word About Thinners

Every foreman finisher has occasion to use thinners, perhaps a point or two along this subject will freshen up his understanding and help out in results. Non-volatile thinners include drying and semi-drying oils. Perhaps the ones in which you are most interested are the drying oils, and therefore, we will treat of them only in this article.

Practically every finisher knows that linseed oil, which is air drying, comes from ripe flaxseed, and is in two colors when pure. What is known as the cold pressed linseed oil is a sort of a very light golden yellow shade, while the oil that comes from the hot pressed method shows a sort of an amber brown color, but sometimes this runs dark and often cloudy.

There are, of course, other drying oils, which include some flax, another poppy seed, fish oil, china

wood oil and perilla oil. With the exception of linseed oil and fish oil those mentioned are much used in artists' colors, but have been employed with very good results in paints and enamels.

China wood oil, unlike any other, dries in a comparatively short time, and with a surface that has what we have come to know as "alligator effect."

Fish oil resembles linseed oil in physical and chemical properties, and probably would enjoy a more universal use were it not for the bad odor which it emits, especially in warm weather. It has found popular use and is very valuable for outside work.

The actually pure linseed oil dries with a clear, firm surface in from fifty to sixty hours and may be thinned with any amount of the various thinners without breaking. It is probably the best grinding oil, and when it is bleached to a fine state will not discolor the very whitest of pigments. Probably its handiest adulterants are kerosene or paraffine oil. Both of these latter materials are cheap.

A prominent feature which a drying oil imparts to

the enamel is its ease of flowing, the soapy spread of the brush without pull, which enables the enamel or paint to flow out evenly without the presence of streaks or brush marks after drying.

An oil in the form of a varnish is necessary for use in enamels for interior work where speed and gloss are a desired feature; and the oil must be so made as to set quickly and hard with a gloss finish which will be entirely free from imperfections.

Many an oil which has been badly doped has been passed by the practical man. He may know that something is wrong, but is not able to definitely detect it. This is perhaps because he does not understand the simple tests we have given which will enable him to put a competent O.K. on his oils.

The above are but a few ideas which will help the practical man in furniture finishing. The subject has been in no way treated in an exhaustive way, but simply interesting and vital points expressed briefly, and will enable the practical man to demand the best for his requirements.

Successful Enameling on Wood

Enamel Painting Demands Considerable Labor and There Are Many Things One Needs to Know About the Material as Well as the Work

Enamel is simply varnish with the addition of some pigment. Sometimes it is desired to enamel over varnished hardwood, though when new work is designed to be enameled a softwood is preferred, one with a close grain, like poplar, for instance. It may interest some readers to learn how enameling is done and what is used; to this end I have prepared the following:

Formerly we called all hard-paint and glossy finishes enamel, but some of these finishes were varnish colors, others being the true enamel. Enamel paint is made by grinding a suitable pigment with a varnish made especially for enamel paint. This is made in paste form, then it is to be thinned with more enamel varnish and probably a little benzine; turpentine would injure its gloss. "Green Seal" zinc oxide is used to produce a white enamel paint, but any good brand of zinc white will answer, only the color must be white. If the enamel is to be tinted, it is done with colors ground in bleached oil and white grinding japan. The varnishes used are usually white damar and white copal; damar makes a soft enamel, while copal gives a hard and tough one.

A Good Surface is Necessary

To do a first-class job of enameling on wood one must expect a great deal of labor and expense, for it will require many coats of paint and lots of rubbing. Here is a formula for the best work: First, the wood must be right; clear softwood, made even and smooth, no defects. The first coat is a primer of white lead and oil, with a trifle of ochre to cover any possible defects of color in the wood; thin out with one-third raw linseed oil and two-thirds turpentine, with a little drier. When this is dry it must be sandpapered smooth, dusted off and the second coat goes on.

The second coat is rough stuff, so-called because a roughish-looking mass of paint material in the form of paste, is applied over the entire surface, filling any uneven parts, and when dry the whole is sandpapered down smooth, or pumicetone and water may be used. The third coat consists of white lead mixed with three-fourths turpentine and one-fourth boiled linseed oil.

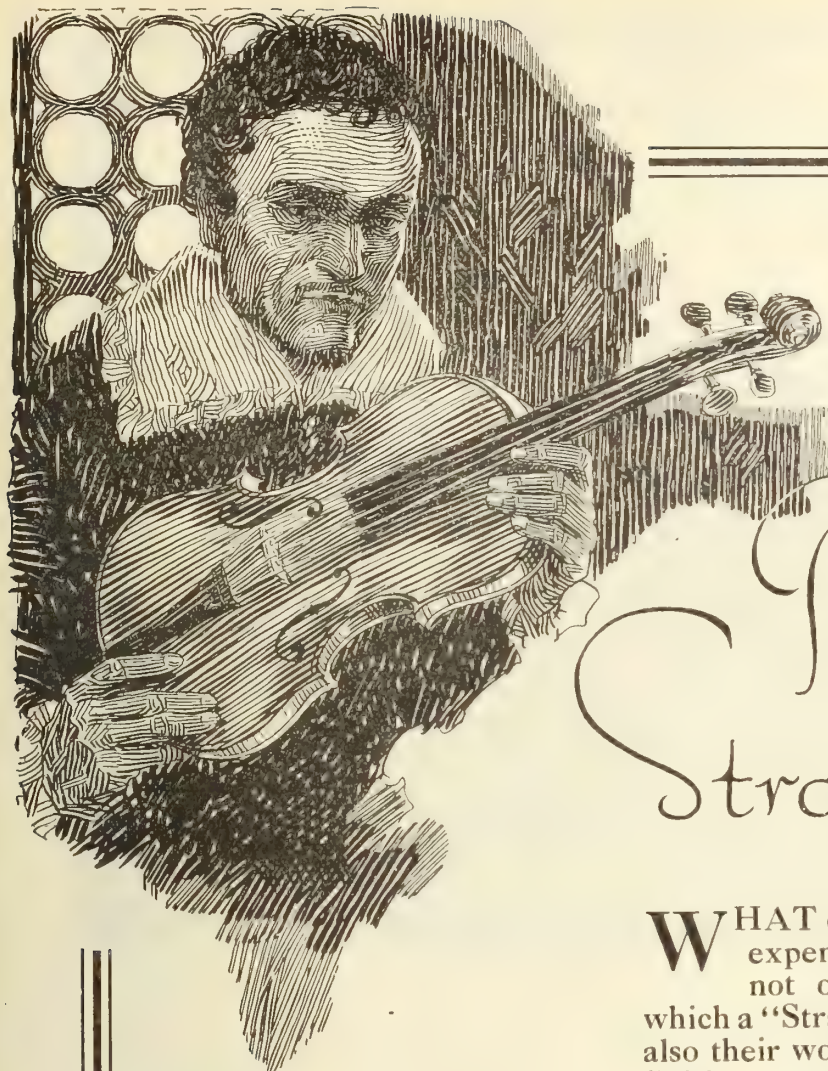
Fourth coat, white lead mixed with five-sixths turpentine and one-sixth white copal varnish. Fifth coat, equal parts of white lead and "Green Seal" French zinc, mixed with three-fourths turpentine and one-fourth white enamel varnish. Sixth coat, "Green Seal" French zinc mixed with three-fourths enamel varnish and one-fourth turpentine. Eighth coat, enamel varnish with sufficient zinc to color the varnish, and with enough benzine to make the enamel work easily under the brush. Turpentine is used by some, but as this injures the gloss, if to be left in gloss, it is better to use benzine, which does not alter the gloss, enables you to work it easily, and finally evaporates. But if the finish is to be rubbed to make a satin effect, then turpentine may be used.

Allow a Long Time for Drying

Each coat as here given, except the last, is to be rubbed smooth with steel wool or haircloth, or with very fine sandpaper. The first four coats are to be given at least four days each for drying, and the last coats six days. For dull finish rub with pulverized pumicestone and water; if with a high polish, leave without rubbing; if with a rubbed polish, first rub with pumice and water, then with pulverized rottenstone and water. If the wood is white pine or sappy, first coat with white shellac-varnish.

Some think that as many as eleven coats are needed for a strictly first-class job of enamel painting, but it is seldom that specifications require more than five coats for new work, and less for old.

If the enamel finish is to go on cypress, the wood will first have to be given a hot glue size; then a coat of white lead, thinned with three times as much turpentine as oil, with some driers. As most cypress is dark, it will be found well to add a little black to the primer, which will give a uniform color to the wood. Then proceed in the usual manner for enamel work, excepting that if you want a dead or lusterless finish, apply the glue size to the bare wood, and for a gloss finish apply the size to the priming coat. This latter size should be made from white glue, to which add a



Poor Stradivari

WHAT endless labor Antoni Stradivari expended on his violins to give them not only the rich tonal beauty for which a "Stradivarius" is world-famous, but also their wonderful depth and richness of finish.

Today this part of his task would be far easier, for he could turn confidently for quick results to



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STAINS

STAINS
FILLERS
ENAMELS
VARNISHES
PAINTS
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KOPALAC
(SPIRIT VARNISH)

and save himself tremendous toil and trouble.

Marietta Stains meet the modern demand for speed, volume and economy in finishing—especially finishing of furniture, piano and cabinet work of every kind. They do it without sacrificing that beauty, which is also a prime essential. They are always practical, because we were stain users before we were manufacturers.

We make both water and oil stains, all compounded from the strongest dyes obtainable.

Our laboratories and service department are at the free disposal of progressive finishers.

THE MARIETTA PAINT & COLOR CO.

MARIETTA, OHIO, U. S. A.

Southern Factory, High Point, N. C.

little white zinc; make it rather thick and apply it hot. When dry, sandpaper it smooth.

How to Mix a Good Enamel

You can buy good enamel paint ready to apply, or you may be expert enough to make your own, but unless an expert it will not pay to make it. Take of Florence zinc white 5-lbs. and white damar varnish 1-gal.; thin with white enamel varnish 1-gal. and camphorated turpentine 1-pt. This latter liquid is prepared by adding to turpentine 2-oz. of gum camphor to the gallon; it improves the enamel and causes it to work smoother. Enamel paint usually works stiff under the brush, owing to its varnish content, hence camphorated turpentine or benzine is used. For interior enamel paint the varnish need not be so hard-drying as to work tough, but on exterior or exposed work it is necessary; it must dry rather quickly, have a hard, durable surface, and yet possess a certain amount of elasticity, to enable it to expand and contract with temperature changes. Yet if made too elastic, which means long in oil, it is apt to remain soft; on the other hand, if made too hard it is apt to crack.

Freshly-made enamel paint does not give as good a finish as one that has been mixed for some time, though it must not be so aged as to have become fatty and work ropery. Fresh enamel paint works out thin, shows laps, brush marks, etc., and does not flat out well. If you have a can of old enamel paint (I have several), before using, place the can in warm water for a while. If it must be thinned it had better be done with mixing varnish, which may be bought.

Some workmen rub enamel with crude oil, but with this you are apt to soften the enamel and rub through. To enamel over an old painted surface it is better to first remove the surface, even down to the bare wood, if convenient. That will remove the possibility of the finish going wrong. The addition of a tablespoonful of coal oil will cause enamel paint to work easier under the brush, and will do no harm. For a quick job of enameling, apply one or two coats of thinned liquid wood filler or surfacer, sandpaper smooth, apply a coat of flat lead paint, then a coat of polishing enamel, then rub down with whatever material you desire, according to job, and give it a finishing coat of enamel.

When Moisture Occurs in Enamel

Thus it will be seen that enamel painting demands considerable work. And there are many things one needs to know about the material as well as the work. For instance, on a moist or humid day, enamel is inclined to pit or frill, this being especially true of that paint containing damar, which is a very soft gum var-

nish. But it is not due alone to the soft nature of the gum, but to the presence of moisture, which comes through the turpentine in which damar is dissolved, turpentine being mixable with water and taking up moisture from the atmosphere, thus adding it to the varnish. This moisture may easily be removed by placing in the damar enamel a few sheets of gelatine, which will absorb the moisture, and being insoluble in turpentine, oil, benzine and varnish, it will do no injury to the varnish.

I mentioned the fact that a thinner for enamel might be bought; makers of enamels supply this thinner for use with their goods so that the enamel may be reduced in body without danger of injuring the gloss. Such a liquid may be made from a mixture of turpentine, benzine, benzole toluol, with a little damar or white copal varnish to prevent flattening.

One source of trouble with enamel paint is the flattening that sometimes occurs, and when not desired. The foundation should be good. Note how many coats of paint go on before the single coating of enamel is applied. That is to make sure that the enamel will not sink into the surface, but stand out with the requisite gloss. Damar and copal are very difficult to dissolve in benzine, hence when using this liquid for a thinner, avoid getting an excess.

What is called refrigerator enamel is made from hardened damar, contains no oil or colored rosin, and is the whitest of the enamels and most lustrous. It won't turn yellow in the dark, hence is useful for insides of refrigerators, cupboards, cabinets, linen closets, etc., or wherever an enamel is desired on interior work shut out from the light. It is very hard and not elastic. The hardening of the soft damar is effected by adding some zinc sulphate, and as this may give the product a cloudy effect, a little alcohol is added to clear up this cloudiness.—The Woodworker, Indianapolis.

Notes on Fillers and Filling

Well filled pores are the foundation for a perfect job.

When you thin a filler measure or weigh the quantities.

A filler should be made to fit the pores of the wood it is to fill.

If the filler is too heavy you are likely to have a poor job.

A smooth surface at the start means a smooth surface at the finish.

"ENAMELS"

Our business in both White and Old Ivory Enamels and Primers has trebled during the past year.

WHY?

They are the best on the market. If you are not using them, write for samples and prices.

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TORONTO

Less Man-power Required

KEEPING up production in the finishing room these labor-shortage days is a problem that thousands of manufacturers have successfully solved.

The Aeron spray-finishing system is making it possible for many of these manufacturers to get their work out with a

fewer number of men on the job; AND for others to handle considerably more work with the number of men now regularly employed.

In a like manner, less man-power can turn out all the finishing you have to do. With the Aeron—production can be speeded up, better work done, and other savings and advantages obtained.

Aeron System
Finishing Room Equipment

Finishing Room Equipment

Saves at least 50% in time and labor alone—

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90 Pcs. Qt. Oak, 2, Sides	60 x 30 x 3 8	64 Pcs. Mahogany, 1 Side	60 x 30 x 3 8
10 Pcs. Qt. Oak, 1, Side	72 x 24 x 3 8	18 Pcs. Mahogany, 2, Sides	72 x 24 x 3 8
6 Pcs. Qt. Oak, 2, Sides	72 x 24 x 3 8	63 Pcs. Mahogany, 1, Side	72 x 24 x 3 8
50 Pcs. Pl. Oak, 1, Side	60 x 30 x 3 8	8 Pcs. Qt. Oak, 1, Side, & Pl. Oak	72 x 24 x 3 8
56 Pcs. Pl. Oak, 2, Sides	60 x 30 x 3 8	Back	72 x 24 x 3 8
58 Pcs. Pl. Oak, 1, Side	72 x 24 x 3 8	6 Pcs. Qt. Oak, 1, Side & Pl. Oak	60 x 30 x 3 8
86 Pcs. Pl. Oak, 2 Sides	72 x 24 x 3 8	Back	60 x 30 x 3 8
22 Pcs. Birch 1, Side	60 x 30 x 3 8	4 Pcs. Walnut, 1, Side	60 x 30 x 3 8

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36 Pcs. Qt. Oak, 1, Side	72 x 24 x 1 4	82 Pcs. Birch 1, Side	72 x 24 x 1 4
50 Pcs. Qt. Oak, 1, Side	60 x 30 x 1 4	50 Pcs. Mahogany, 1 Side	60 x 30 x 1 4
1 Pcs. Qt. Oak, 1, Side	68 x 24 x 1 4	37 Pcs. Mahogany, 1 Side	72 x 24 x 1 4
3 Pcs. Qt. Oak, 1, Side	70 x 24 x 1 4	12 Pcs. Mahogany, 1 Side	70 x 22 x 1 4
3 Pcs. Qt. Oak, 1, Side	60 x 24 x 1 4	8 Pcs. Mahogany, 1 Side	60 x 24 x 1 4
50 Pcs. Pl. Oak, 1, Side	72 x 24 x 1 4	4 Pcs. Mahogany, 1 Side	54 x 24 x 1 4
50 Pcs. Pl. Oak, 1, Side	60 x 30 x 1 4	3 Pcs. Mahogany, 1, Side	72 x 20 x 1 4
1 Pcs. Pl. Oak, 1, Side	70 x 24 x 1 4	1 Pcs. Mahogany, 1, Side	60 x 29 x 1 4
62 Pcs. Birch 1, Side	60 x 30 x 1 4	4 Pcs. Mahogany, 1, Side	72 x 12 x 1 4

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Three Glue Room Requirements

The Most Suitable Grade of Glue—Care and Cleanliness in its Use—A Practical Production Cost System

By Albert Hudson

Glue is a very important thing in a factory, and care should be exercised in its handling. Notwithstanding all that has been written, in the trade journals upon glue and gluing methods, there are still factories where carelessness and abuse of glue are to be found. There are many workmen who think that their age and experience entitle them to a full knowledge of handling glue, and will not listen or take kindly to the advice of an expert or any outside assistance.

Cleanliness is Necessary

The writer recently visited a furniture factory where vegetable glue was used for veneering, the spreader being one of the latest, with corrugated rollers. These rollers were in an extremely dirty condition, being filled up with a hard substance consisting of glue and dirt. This, of course, caused an uneven spread. The workmen handling the cross-banding would have to dip his hand into the reservoir of the spreader and, where the roller had failed to cover, spread on the glue with his hand. It appears that in the factory the spreader received a monthly cleaning that being recognized as sufficient to answer the purpose. In passing let me say that to ensure good work the glue spreader should be cleaned every night. Only enough glue should be let down into the reservoir for the particular job that is intended for gluing or veneering. This judgment is only gained by experience. There are veneer men who can gauge the quantity of glue for their different jobs to a nicety. These men take an interest in their work and are the right kind of men to have in the glue room.

The floor of the platform above this particular spreader was laid with the boards about $1\frac{1}{2}$ in. apart, and allowed the dirt to fall on the spreader and into the glue. How could good veneering be expected under such conditions.

Upstairs, in the cabinet room, animal glue was used, there being a reservoir, with one large well containing the cooker or pot for making the glue, and six small wells for the cabinet makers' use for the heating of their glue in the small glue pots. This reservoir was dirty and just thick with hard-cooked glue and it looked as if it had never been cleaned, since it was first installed; in fact it was difficult to place the small glue pots into the wells, because of the hard glue around. The larger glue pot or cooker could not be taken out owing to being beautifully enclosed with glue.

When fresh glue was required, instead of soaking, the glue was placed into the cooker, and then the hot water would be taken out of the reservoir and applied to the glue. The steam was then turned on and

the glue would be allowed to boil. Under such conditions could the glue be expected to give satisfaction. Yet in both cases the glue was bearing the blame.

It is a fact that glue is cooked to death, that it will not dissolve and wastes if not soaked in water. It is also a fact that it is, in many cases, soaked too long. I have known vegetable glue to be spoiled by cooking and a batch of 50 lbs. thrown away.

Carefully Regulate the Heat

Heat damages glue, but there must be a certain amount, however. Using glue at a temperature of 130 deg. would be wrong; you would be inviting trouble. The glue would be undone and you would experience trouble on account of the glue not sticking. At a temperature of 160 to 165 deg. F. the glue would be overcooked and practically ruined. Experiments have proven that the moment a mixture of glue and water is heated enough to melt it, a gradual change begins to take place. The spreading capacity and the water absorbing qualities of the glue are gradually destroyed. The body is gradually taken completely out of it. On account of the water attacking the glue and the heat increasing the effect of this attack, the damage is in direct proportion to the amount of heat and to the length of time the glue is kept hot. Again it has been proven that glue kept warm is gradually killed, there being no exception. It can be plainly seen that there is a certain amount of evaporation, causing the glue to become thick. Water is added to thin it, and it is only by chance that the glue is the same consistency as when first made.

Prepare in Small Amounts

One of the things to observe is to use it while fresh—while it has all its strength—before the continued heat has a chance to weaken the fibres. Mix batches up in small quantities; reheating an old batch of glue should be a thing unheard of these days, yet some factories are using their glue by hit and miss methods. Manufacturers of glue may well ask what is the use of taking care to manufacture and sell a perfectly uniform grade of glue when the users treat each batch in a don't care, haphazard, hit or miss manner.

Some say that we buy the very best glue upon the market. While this may be true, yet it is not always the highest priced glue that gives the best results. All high-grade glues are quick setters, therefore a little experimenting may be necessary to determine just what glue can be used to advantage in your particular line.

Many factories prepare enough glue to last three or four days. This is wrong if success is to be obtained. Many glue salesmen are up against this trou-

ble and are fighting it every day, but even at this some men go on just in the same old way, deteriorating glue quality, then blame the glue.

When we stop to consider that glue was used long before any of us were here to use it, that built up stock glued before our time is holding much better than some put out at present, when stock will not hold together until it leaves the factory, there is something wrong, and it is not always the fault of the glue. The trouble may be caused by lack of common sense and good judgment. Oftentimes it is caused by being in too great a hurry to put the work through the factory. If we have a good glue, carelessness in the mixing and using of it. Keep the glue cost down is the slogan in some factories, and by so doing they turn out poor work, and in the end, increasing the cost of output and losing trade in addition.

Glue Room Cost System

Many manufacturers have cost systems in force, but cost accounting in the glue room is a very difficult proposition. It has often been said that, where the work goes through this department in large quantities and where anything up to 7 or 8 orders are handled every day, it is almost impossible to keep a production cost account. In many factories the wages paid in this department, the cost of glue and other materials are just figured up and the total divided by the number of feet put through. In this way there is no attempt made to figure the actual cost on each order. It is a great advantage to the manufacturer to know the profit or loss on each order that goes through this department. This can only be obtained by a good method of cost accounting, it would be safe to say that there are glue rooms making a fair profit with which they are not credited, while others are working at a loss, therefore swallowing up, to some extent, profits made by other departments.

It would be a great advantage to any manufacturer to know just the profit and loss on each particular

order put through the glue department. A cost card showing all materials used, and the workman's time, on each order should give your glue room production costs.

No 1 gives particulars of the ordinary run of work going through the glue department.

No. 2 gives particulars of quantity of tables or panels where the stock ran out in the cross-banding. To fill the order, however, a size of 5 inch larger is taken. This would, of course, increase the cost of this order, and it also distributes the loss of waste on this particular order.

No. 3 gives particulars of repair job, giving material and labor for the same.

Any veneer that is accidentally broken or glue wasted, after having been taken from the stock room must, of course, be added to the original quantities. It can be seen to that the card gives kind of veneers, wood, quantities and grade of glue, on each order.

Quantities Should be Known

The measuring of the glue is the most difficult problem. A record should be taken of the dry glue necessary to fill the heater or cooker up to a certain given point with liquid glue, and the number of pounds, both of dry glue and liquid glue carefully noted. There must, however, be some experimenting before a sure method of measuring the glue can be accomplished.

A measuring stick should be made upon the same principle as the one for measuring barrels scaled in pounds, and in making this the strength of the mixture of glue must be taken into account.

Glue Spreader is Economical

The most economical glue spreading method is by the spreader. It is possible these days to adjust the correct flow of glue on any core stock or veneers. It is also possible to adjust the machine so as to have a heavy spread on one side and a lighter spread on the other side, and this all in one operation. It has been

Glue department card									
Foreman - Fred Day									
Goodwin Furniture Co.									
Date 24-1-19.									
No 25									
NO OF ORDER	FACE VENEER	OUTSIDE VENEER	CORE OF CROSSBANDING	WOOD	FINISHED THICKNESS	GRADE AND WEIGHT OF GLUE	TIME	REMARKS	
505	50ps 24x18			1/8 Walnut			4-30		
		50ps 24x18		1/8 Birch					
No 1			50ps 24x18	1/4 Basswood	1/2 inch	XXX Grade 10 lbs	6-00	Core stock	
							1 1/2 hrs		
506	50ps 24x18			1/16 Oak 44			3-00		
		50ps 24x18		1/16 Birch					
			50ps 24x18	3/16 Basswood				Core stock	
No 2			16ps 14x24	1/16 Birch		XX Grade 15 lbs	5-30	24x18 Birch out of stock Use	
							2 1/2 hrs	24x18 in place	
45	20ps 15x50			1/16 Walnut			3-00		
		15ps 15x50		1/16 Birch					
No 3					1/2 inch	XX Grade 2 1/2 lbs	4-30	Note: - Used these amounts for facing & backing repairs on this order	
							1 1/2 hr		

Cost Card for Glue Department

said that the laying on of the glue with the spreader results in glue waste and weak joints. This is entirely wrong. It is quite true, however, that glue starvation does sometimes occur. This, however, is the fault of the operator.

Fine Veneers in Stock

Among the advertisements appearing in the columns of this journal will be found that of the Long-Knight Lumber Co., Indianapolis, Ind. This firm manufactures a line of high-grade lumber, including such woods as walnut, cypress and oak.

In addition to the lumber they carry a stock of select veneers and at present are offering an exceptionally nice line in 1/20 in. quarter-sawed white oak and walnut veneers.

More New Grading Rules

In a late issue we printed specifications as adopted by the National Veneer and Panel Manufacturers' Association, covering quartered oak veneer, sawed and sliced, also rotary cut, white and red oak. The following is a continuation of the grading rules as adopted by that association and as such will interest every user of veneers and three-ply.

Rotary-cut Poplar, Grades.

Faces—Stock of any thickness; shall be free from defects, but shall admit of bright sap in any proportion. Splits are permitted that will close in laying.

Backs—Stock of any thickness; shall admit of sound defects, discolored sap, pinworm holes and splits open not to exceed 1/8-in. in width.

Cores or Centres—Stock 1/15-in. or thicker, to be free from open defects, but shall admit of pinworm holes, sound doty spots, discolorations and splits that will close in laying; splits not to extend more than 10 per cent. of the length.

All stock not exceeding 40-in. in length shall contain the following proportions of full pieces:

Up to and including 36-in. wide.....	60 percent whole sheets
37 to 59-in., inclusive.....	50 percent whole sheets
60 to 73-in., inclusive.....	40 percent whole sheets
74 to 86-in., inclusive.....	25 percent whole sheets

Fractional sheets to consist of two or three pieces, and an allowance of 1/2-in. shall be included in each piece to permit of jointing.

Crossbanding—Stock to be 1/16-in. or less in thickness; to be free from open defects, but shall admit of pinworm holes, second doty spots, discolorations and splits that will close in laying; splits not to extend more than 10 per cent of the length.

All stock not exceeding 40-in. in length shall contain the following proportions of full pieces:

Up to and including 36-in. wide.....	60 percent whole sheets
37 to 59-in., inclusive.....	50 percent whole sheets
60 to 73-in., inclusive.....	40 percent whole sheets
74 to 86-in., inclusive.....	25 percent whole sheets

Fractional sheets to consist of two or three pieces, and an allowance of 1/2-in. shall be included in each piece to permit of jointing.

Log-run—Stock of any thickness; random lengths and widths, 1/15-in. and thinner, to run 48-in. and over long, not less than 50 per cent. 60-in. and over long; widths 8-in. and over wide, not less than 50 per cent. 18-in. and over wide.

Stock 1/15-in. and thicker, to run 36-in. and longer, not less than 50 per cent. 60-in. and longer; widths 6-in. and over, not less than 50 per cent to be 16-in. and over.

Log-run stock to produce not less than 50 per cent.

cutting of face stock, remainder suitable for centres or backs.

Rotary-cut Ash, Basswood, Birch, Beech, Elm and Maple.

No. 1 Faces or Face Stock—Stock of any thickness, free from knots, shall admit sap, splits that close, and slight discolorations.

Select Faces or Face Stock—Stock of any thickness of the same grade as face stock, except that it shall be selected as to color.

No. 2 Faces or Face Stock—Stock of any thickness shall admit sound knots, splits that close and log-run color.

Backs or Backing Stock—Stock of any thickness shall admit sound knots, pinworm, discoloration, firm doty spots and open splits and checks, not to exceed 1/15-in. in width.

Drawer-bottom Stock—Stock of any thickness shall admit sound knots, closed splits, pinworm holes and log-run color.

Centre Stock—Stock of any thickness shall admit sound knots, pinworm holes, discoloration, firm doty spots and open splits and checks not to exceed 1/16-in. in width.

Fitch Stock—Stock of any thickness, of random widths and lengths, 10-in. and wider, the sheets to be kept in consecutive order as they are cut from the fitch. The stock is to be at least two-thirds No. 1 faces.

Log-run stock—Stock of any thickness, random widths and lengths as the logs will make, 6 to 36-in. wide, 4 or 5-ft. to 8-ft. long, not less than 75 per cent. to be 12-in. and wider, not over 50 per cent. 84-in. and over long. At least 50 per cent. of the number of feet in the stock shall consist of sheets, each of which shall cut at least three-fourths No. 1 face stock in cuttings 6x24-in. and larger. The balance of the stock shall be at least suitable for centers and backs.

Defects not admitted in centres and backs shall be included in log-run, but scaled out based on the width of the defect and length from farthest point in defect to nearest end of sheet.

Occasional straight splits running not over one-third the length of sheet are considered no defect. (Note.—These defects thus included and scaled out are left in to assist the buyer in cutting stock to best advantage).

Veneer to be clipped in random widths and measurement taken by tape across the whole width of each sheet and the sheets crated as they run, without sort, ing as to width.

Crossbanding—Stock not thicker than 1/15-in., cut to dimension sizes, shall admit sound knots, splits that close, pinworm holes, firm doty spots and log-run color.

Dimension Stock—All dimension sized stock, unless otherwise particularly specified, shall be machine-cut to exact lengths and may be a trifle full as to width.

Rotary-cut Gum.

There shall be four kinds of gum veneers, as follows: 1—Unselected red gum; to be any color. 2—Selected red gum, to be all red for color. 3—Selected figured red gum, all figured red for color. 4—Selected sap gum, to be all white for color.

Faces—Stock of any thickness shall be free from all defects except slight splits that will close in laying.

Selected or figured face stock of any thickness to

be the same grade as face stock, except it shall be selected as to color or figure.

Backs—Stock of any thickness shall admit sound defects and pinworm holes and splits not open to exceed $\frac{1}{8}$ -in. in width.

Dimension Stock—All dimension stock in any thickness shall be machine cut to the length specified, and, if allowance is desired for trimming, specifications should be for length required and stock is to be billed and measured at actual lengths cut, and all dimension sizes may be a trifle full as to width.

Unless otherwise specifically stated, all orders for dimension sizes are to be cut to the sizes specified in one-piece stock, in addition to include what part pieces the logs produce, and the part pieces are to be as wide as possible.

All dimension stock must be cut reasonably square.

Standard Crossbanding—Stock of $\frac{1}{16}$ -in. or less in thickness to be unselected for color, to be free from open defects, but shall admit pinworm holes, sound doty spots, discolorations and splits that will close in laying (splits to be not more than 10 per cent of the length of the piece).

Stock not exceeding 40-in. in length shall contain the following percentages of whole sheets:

Up to and including 36-in. widths.....60 percent whole sheets
All stock 37 to 59-in. widths, inclusive....50 percent whole sheets
All stock 60 to 73-in. widths, inclusive....40 percent whole sheets
All stock 74 to 86-in. widths, inclusive....25 percent whole sheets
(On piece stock $\frac{1}{2}$ -in. must be allowed on each piece for jointing.)

Core or Centre Stock—Stock of $\frac{1}{15}$ -in. or thicker to be unselected for color, to be free from open defects, but shall admit pinworm holes, sound doty spots, discolorations and splits that will close in laying. (Splits to be not more than 10 per cent of the length of the piece,)

All stock not exceeding 40-in. in length shall contain the following percentages of whole sheets:

Up to and including 36-in. widths.....60 percent whole sheets
All stock 37 to 59-in. widths, inclusive....50 percent whole sheets
All stock 60 to 73-in. widths, inclusive....40 percent whole sheets
All stock 74 to 86-in. widths, inclusive....25 percent whole sheets
(On piece stock $\frac{1}{2}$ -in. must be allowed on each piece for jointing.)

Unselected Log-run—Stock of any thickness must grade at least 50 per cent or more clear cutting in face grade and no cutting is to be considered that is less than the minimum width allowed in the thickness and less than 12-in. in length.

In all thickness up to and including $\frac{1}{15}$ -in. the stock shall be 8-in. and up wide, with at least 50 per cent of the stock 16-in. and wider; to be 48-in. and up long and at least 50 percent 60-in. and longer.

In thicknesses of $\frac{1}{12}$ -in. and thicker, the stock shall be 6-in. and up wide, with at least 50 per cent. of the stock 16-in. and wider; to be 36-in. and up long and at least 50 per cent. 60-in. and longer.

Selected log-run shall be of the same specifications, except that it shall be selected for color..

Unselected Sheet Stock—Stock of any thickness must grade at least 75 per cent. clear cutting in face grade and no cutting to be considered that is less than 6-in. wide by 24-in. long.

In all thicknesses up to and including $\frac{1}{15}$ -in. the stock shall be 8-in. and up wide, with at least 50 per cent. 18-in. and wider; to be 48-in. and up long, with at least 50 per cent 72-in. and longer.

In all thicknesses of $\frac{1}{12}$ -in. and thicker the stock shall be 6-in. and up wide, at least 85 per cent 11-in. and wider, and must have 50 per cent. of the total at least 16-in. and wider; to be 36-in. and up long, at least 90 per cent 68-in. and longer.

Selected sheet stock shall be of the same specifications, except that it shall be selected for color or figure.

Babbitting Wrinkles

Among the babbitting wrinkles that come in especially handy in making the mid-winter repairs are those which pertain to guarding against trouble from cold shafting and journals. Of course the best thing is to warm them, but often this is not practical, and when it is not the extra chill in metal in winter time is likely to cause trouble in babbitting unless some precautions are taken.

Covering the shafting with something to prevent contact of the babbit with the surface is a commonly used safeguard. The coverings used are: wrapping with paper, coating with chalk, with white lead, or even with oil. Paper is one of the best of these, for in addition to insulating the cold journal it makes the poured job as much larger as the paper is thick and this helps prevent pinching the journal. There are many who prefer chalk however, and a coating of chalk is the easiest thing to apply. And there are those who argue that a light coating with coal oil of both shaft and box will help insure a smooth job.

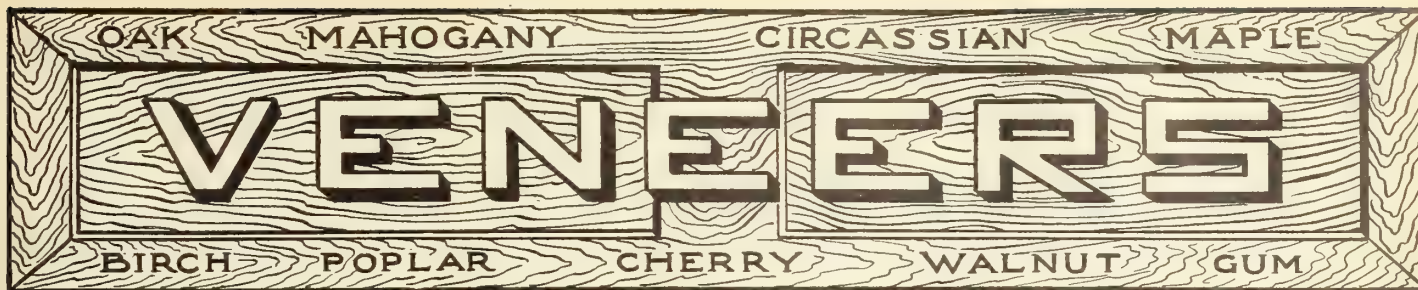
As stated above, the best wrinkle is to heat the journal and box enough to take the frost out. This can often be done by laying a heated chunk of metal in the box, then after the box is warm putting the shaft back in it. This heating, however it may be done is likely to produce some sweating of the metal, and this moisture must be carefully dried off before preparing the box to pour or else a spew will result.

Veneers of High Quality

We manufacture an excellent grade of sawed and rotary veneers, poplar and maple crossbanding and sheet stock, walnut butts and long wood and sawed quartered oak veneer. You will find that they will be equal to your expectations and most suitable to any line for which veneers are used.

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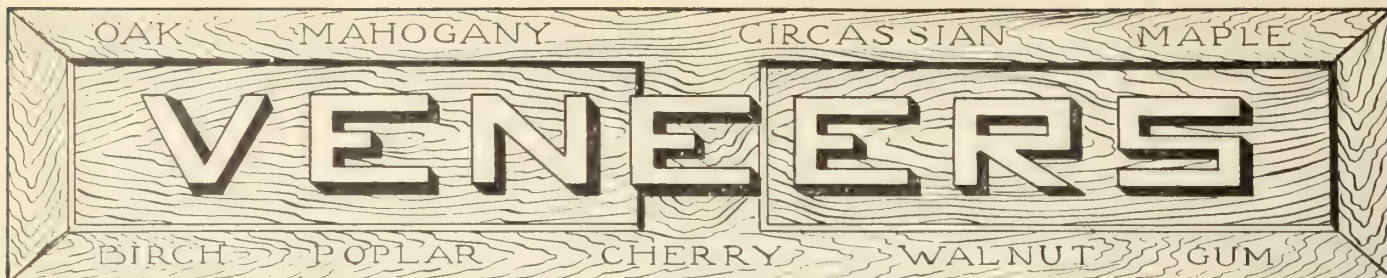
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 5,000' 4/4" Mex. Mahogany Shorts, 1st & 2nds
 5,000' 4/4" Mex. Mahog. Shorts, Com. & Btr.
 6,000' 6/4" Mex. Mahog., 6' & up No. 1 Com.
 10,000' 8/4" Mex. Mahog., 6' & up No. 1 Com.
 1,000' 8/4" Mex. Mahog. Shorts, 1sts & 2nds.
 1,000' 12/4" Mex. Mahog., No. 1 Com.
 500' 12/4" Furniture cuttings.
 30,000' 4/4" Mex. Mahogany, No. 1 Common
 5,000' 4/4" Cuban Mahogany.
 5,000' 8/4" Cuban Mahogany.
 30,000' 2"x 2" and 3"x 3" (cut to your lengths)
 up to 36" Clear White Oak Squares
 15,000' Log Run Birch (culls out) 1"
 15,000' Log Run Birch (culls out) 1 1/2"
 35,000' Log Run Birch (culls out) 1 1/2"
 10,000' Log Run Soft Elm (culls out) 1"
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VENEER of All Kinds and Thin Lumber

SPECIALTY:—WALNUT
Sliced, Half-Round and Rotary Cut

NEW ALBANY
IND.



Reg. U.S. Pat. Office
Incorporated 1904 Established 1867

The Quality Mark in **QUARTERED OAK VENEERS**

It is admitted that the best grades of hardwoods are Northern-Grown. The entire production of our modern mills consists of these high grade woods. In texture and figure Hoffman Bros.' Veneers are unexcelled. You will find them superb for the manufacture of your most elaborate designs.

Prompt shipments made direct from our extensive stocks. Satisfaction guaranteed.

An average case—150,000 feet Northern White Logs
in one of the Piles at Our Fort Wayne Mills.

WE OFFER

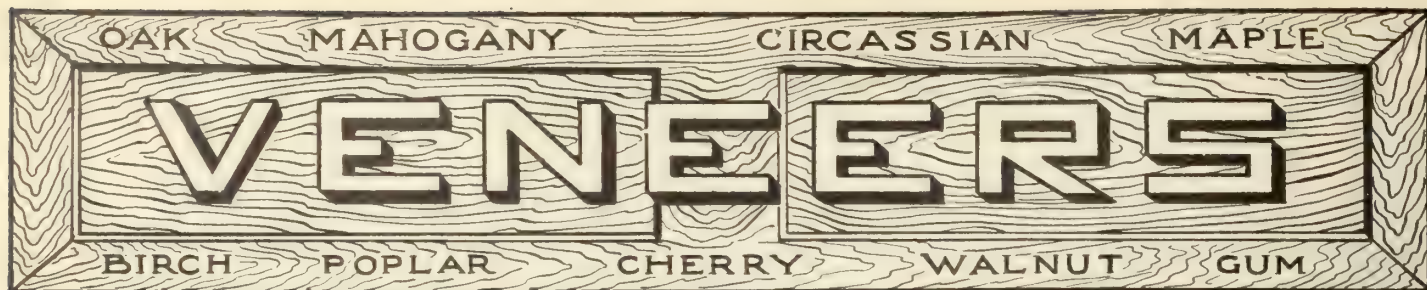
Lumber—3/8 to any size in length.

Veneers—1/20 to 5/16 incl., up to 22 ft. long.



HOFFMAN^{BROS} CO.
FORT WAYNE IND.





WALNUT

and

Quartered White Oak

VENEERS

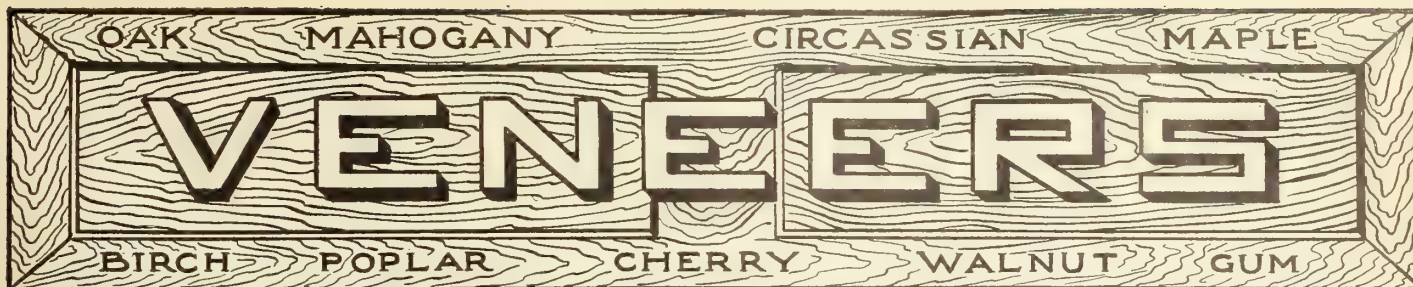
and

LUMBER

Prompt delivery

Long-Knight Lumber Co.
Indianapolis, Ind.





$\frac{5}{8}$ " Lumber

We offer the following dry, band sawed lumber. Remember that there is thirty years of experience back of every board:

80,000 $\frac{5}{8}$ FAS Pl. White Oak
 80,000 $\frac{5}{8}$ No. 1 Com. Pl. White Oak
 30,000 $\frac{5}{8}$ FAS Plain Red Oak
 20,000 $\frac{5}{8}$ No. 1 Com. Pl. Red Oak
 40,000 $\frac{5}{8}$ No. 2 Com. Pl. Red Oak
 20,000 $\frac{5}{8}$ No. 1 Com. Sap Gum
 27,000 $\frac{5}{8}$ No. 2 Com. Sap Gum
 20,000 $\frac{5}{8}$ No. 3 Com. Sap Gum
 100,000 $\frac{5}{8}$ FAS Poplar
 200,000 $\frac{5}{8}$ No. 1 Common Poplar
 100,000 $\frac{5}{8}$ No. 2 Common Poplar

*Write for our Complete List
with Prices*

North Vernon Lumber Co.

NORTH VERNON, IND.

LOUISVILLE, KY. DYERSBURG, TENN.

Every Board Branded "N.V.L.C." Quality Guaranteed

Sovemanco

Southern Veneer Manufacturing Co., Inc.
LOUISVILLE, KY.

Manufacturers of all kinds
of Sawed, Sliced and
Rotary-cut

VENEERS

Carrying a large stock of
selected Mahogany,
Figured and Plain Walnut, Walnut
Butts, Sawed and Sliced Quar-
tered Oak and Sycamore and all
other native woods.

**1,000,000 Feet Quartered Red
Gum to select from**

CAN fill rotary-cut gum orders promptly

WE Respectfully solicit your inquiries

Poplar and Walnut Veneers

We specialize in large size poplar veneers as we have extra fine poplar logs. We can cut veneer up to 10 feet square.

Our walnut veneer cannot be beat, both in plain and figured wood.

Write us for prices.

Central Veneer Company
Winter Ave. and Belt R.R., INDIANAPOLIS, IND.

Figured ^a and ^d Plain

Mahogany

Walnut

Quartered Oak
(Sliced and Sawn)

R. C. Birch

Basswood

Maple

Poplar and Gum
(Cross banding and
center stock)

We are in position to furnish the above
PLAIN WOODS

in carload and less than carload lots, and
will be pleased to have your inquiries.

If interested in

FIGURED WOODS

will gladly submit samples.

Veneer Manufacturers Co.
S. E. Cor. Fulton and May Streets, CHICAGO, ILLINOIS

ROBT. BURY & CO., Canada

LIMITED

Hardwood and Veneer Merchants

3 PLY B. C. FIR PANELS

INTRODUCING

NAPCO WATERPROOF GLUE

NAPCO is mixed with **cold water** only.
NAPCO requires **no heat**—heat costs money.
NAPCO spreads with **brush or machine**.
NAPCO stands **boiling, baking or soaking**.
NAPCO beginning **insures a good finish**.
NAPCO **best**—pianos to packing cases.
NAPCO joints **stronger than wood**.
NAPCO is an **odorless** glue.

Head Office and Veneer Warehouse

1 Spadina Avenue, TORONTO

Lumber Yard and Mill

Foot Spadina Ave., TORONTO

Fill out this coupon and mail to-day.
ROBT. BURY & CO., Canada, Limited
1 Spadina Avenue, Toronto

Dear Sirs,
Please send, without obligation on our part, information and samples of Napco Waterproof Glue.
NAME _____
ADDRESS _____
(Can. Woodworker)

Practical Repairing of Loose Veneers

Veneered Stock Should be Inspected Carefully—How to Make Simple Repairs —Bare Spots Often Found After Sanding

In any shop where quantities of veneers are glued up there is always a certain amount of trouble from loose veneers. While good glue and careful workmanship may almost eliminate this trouble, yet it has never been entirely overcome.

Now that there is a demand for greater production, owing to speed-up methods, it is just possible that loose veneers will be met with more frequently than in the past. The trouble may be divided into two classes, loose veneers at the edges and blisters. Blisters occur anywhere on the face of the stock.

Inspecting Veneers Before Finishing

At one time, when the writer was employed by a large woodworking plant which turned out a large amount of veneered stock, it was part of my duties to inspect the veneered work before it was sent forward into the finishing room. This material had already been through the cabinet room, but as the cabinet-makers were on a piece-work basis, and at a low figure, the foreman did not insist that they repair the loose veneer they encountered.

At first it was not easy to detect this fault, as the blister or looseness often did not raise sufficiently to be noticed by the eye. When dusting this stock, though, with a brush, one's ear became so accustomed to the firm, solid ring of sound wood that the slightest hollowness or shelliness was instantly noticed, owing to the different sound emitted when the brush was passed over the hollow spot.

After locating the loose places they were carefully examined and the size of the blister was determined. A chalk mark was drawn around all loose spots and the stock was laid to one side.

Repairing a Loose Edge

If the looseness occurred at the edge it was a comparatively simple matter to repair it. A thin knife or a corset steel, which had been ground thin, was run into the opening. This causes any of the veneer around the edges of the loose spot, that might become loose, to open up. The stock is then stood on edge and thin glue is worked into the opening, a thin piece of wood or steel being used. A warm block is then pressed on with a hand-screw or clamp and the veneer laid away for the glue to set.

When Clamps Cannot be Used

When the looseness occurs on the face of the stock it is not readily repaired. It is often at such a distance from the edge that ordinary clamps or hand-screws are not of any use. The following method will solve this difficulty. Tap the surface around the blister to make certain of its exact size, then with a thin knife open the blister, slitting it the full length; be sure and cut with the grain to avoid splintering. Next take a thin piece of steel and work some glue into the opening. This must be done thoroughly, so as to be certain that every bit of loose veneer has been reached. All glue must be squeezed out and the spot worked down by rubbing with a hammer until the glue sticks.

Another method is, after ascertaining the extent of the loose surface, to take a sharp knife and score

the part to be glued. Scores to be made close together and to run with the grain. Next rub thin glue over the scored surface, rubbing thoroughly in both directions. Work down with a hammer and allow to stand a day before scraping and sanding.

Face Veneers are Often Sanded Through

It often happens that in finishing veneers on the rotary sander the veneer is cut through in spots. If this damage is extensive the only remedy is to glue on a new face veneer, but in some cases, it may be repaired in the following manner. Where the veneer is ground off at a corner a piece of veneer may be lapped on. When properly done this is a very satisfactory repair.

A piece of veneer is taken and one edge cut in a semi circle. The circular edge is then chamfered, a block and sandpaper being used for this purpose. The edge of the bare spot is also chamfered to fit this semi-circle. After gluing in must be held tightly by a clamp. Care must be taken to make sure that the grain of the patch runs in the same direction as the face of the veneer.

Trend in Wood Turnings

While the main feature of the turned wood situation right now is in the wholesale elimination of patterns so that we may have more standardization, with better conservation and greater efficiency all around, there is aside from this an interesting trend in turnings, especially for furniture. The trend, strange as it may seem, is toward two extremes. That is toward the massive on the one hand, and toward the delicately slender on the other. Those who have roomy homes turn to the more massive offerings, while those who dwell in flats where every inch of space is measured turn toward the other extreme of delicacy in selecting furniture. At least that is the way it seems after talking with the furniture folks—that when they put size into bed posts, for example, it pays to go in for massive effects, for these find more favor than the medium or compromise between the delicate and the heavy. It is the William and Mary that frequently runs to the massive, while the Martha Washington and some other patterns run toward the other extreme of delicacy.

Built-Up Squares

We have developed quite extensively the habit of building up squares for turnings, from 1-in. lumber, and even from scraps and shorts accumulating about the place. And the work of building airplane propellers and frame parts has given a sort of official status to the quality of the built-up job. That it effects economy in timber is easy enough to see, for shorts can be used to build up those places calling for larger parts in the finished turnings. By using waterproof glue and taking pains to do a good job of it all the time, there is no logical reason why the built-up square for turnings should not make an even larger place for itself in the cabinet world.

The Lumber Market

Domestic Woods

The local lumber situation has changed very little since last month. Taking into consideration the fact that this season of the year is usually quiet the present demand may be said to be good. A limited number of orders are being placed, but as yet the furniture manufacturers and sash and door men are not attempting to buy in quantities. Inquiries are becoming very numerous and indications point to a good volume of business offering in the near future.

Present prices are, on the whole, being maintained. In a few isolated instances there have been slight reductions made. Some of the lower grades of both hardwood and softwood are showing a slight decrease. There is a certain amount of Coast softwoods and yellow pine, from below the line, coming in; but it has not had any marked effect on prices. The buyers, with few exceptions, are holding back, hoping for the much desired drop in prices and are ordering from hand to mouth. Stocks are very low at present. This applies particularly to dry lumber. Some lines, notably 4/4, 5/4, 6/4 birch, are almost off the market. The prospects of the dealers being able to replenish their stocks are none too good. The season's cut of logs will be far below normal, and there is the possibility that it may be impossible to get all of even this small cut to the mills. The dry stocks at the different mills is almost all bought up. Certain of the mills have advanced their prices from 10 to 20 per cent.

Sizing up the situation, as a whole, it looks as if there will not be any marked easing off in prices, but that in certain lines there will be, in all probability, a slight increase in price.

Imported Woods

There has been a slight improvement in the hardwood market during the last few weeks. A very fair volume of business is now being placed on an immediate shipment basis.

On the part of the buyers there still remain a slight inclination to hold for lower prices, but the lumber dealers are gathering, rather than losing, optimism as the weeks go by.

It is really not necessary to go much farther than the consideration of supply in arriving at one's conclusions, because the supply in sight is so far short of what the normal demand might be that any falling off in the realization of this demand would have to be very marked in order to bring demand down to the point of supply as it promises at this date.

This phase of the situation has been emphasized a lot of late, but at no time has a prophecy of short supply been based on such certain figures. It is authoritatively stated that the southern hardwood manufacturers cannot hope for more than 50 per cent. of the usual supply of logs, while farther north the mild winter has so retarded operations that 60 per cent. of the usual cut is all that can be expected. Using the above figures as a basis the total hardwood cut for the year is not expected to run more than from 50 to 60 per cent. of the normal production.

From Memphis comes the report that prices are showing a slight tendency to advance and that that tendency is expected to become more pronounced as

the year proceeds. There has been virtually no decrease in the cost of production and it is the opinion of the hardwood interests there that any dealer who sells below the present market with the expectation of being able to replace his stock at a profit, stands to lose a few dollars.

More Walnut Available

Enormous amounts of walnut logs have been cut and sent to mills for gunstocks for the government. And proportionately large amounts have been refused because of failure to meet government requirements. This the saw mills hope to sell for the manufacture of furniture, but, of course, this depends upon the trend of fashion. From 1,000,000 to 2,000,000 feet of black walnut are now on the way to saw mills over the country, but the demand for gunstocks has been reduced and the question now is how much of this material the government will buy. Like the rejected timber, these logs can be made into furniture if fashion demands it.

Birdseye Maple

We seem to have rounded out a cycle for birdseye maple, so that to-day it is in just about as high favor as it was ten years ago. It has always been with us more or less, and now we seem to have one of those periodic high tides in it that will call for a much larger volume of this veneer than the trade has been using for several years now. Birdseye is distinctively a rotary veneer products, for peeling it around the log with a veneer machine is the one best way to get the full figure effect. And since it is a native product and maple is a splendid wood to cut on the rotary, there should be good news for those in position to produce it in the fact that it is once more running high in public favor.

Statement Regarding Mahogany Prices

The following statement comes from a leading manufacturer of mahogany lumber and veneers relative to the price situation on mahogany, and reasons for such figures:

Below are current prices on mahogany lumber, as follows, viz.:

4/4"	Per M ft.
1sts and 2nds	\$300.00
No. 1 common	200.00
No. 2 common	100.00
Moulding strips, 3 in-5 in. x 6 ft. and up..	200.00
Shorts, 4 in. and up x 2 ft. to 5 ft.	160.00
No. 1 wormy	75.00
Short shorts, 2in. and up x 2 ft. to 4 ft. ..	60.00

Thinner and thicker stock in customary proportions.

The compelling economic factors that are present in any manufactured line, such as increased cost of labor, domestic freight rates, etc., apply with equal force to mahogany, and in addition thereto are the increased ocean rates which represent a goodly proportion of the cost of mahogany.

Piano manufacturers in the Maritime Provinces have been having difficulty securing sounding boards for their instruments owing to the great demand for clear spruce, which was made by the government for the construction of airplanes. Sounding boards and airplane beams call for the same quality of stock and now that the great demand for the later will be lessened owing to the cessation of hostilities, the piano men will be able to secure the desired wood.



There is **FORCE** *in Organization*

The big achievements in industry are the result of intelligent co-ordination of effort, i. e. organization.

Organization means greater buying power and the ability to manufacture more efficiently, more uniformly and at less cost. This is not a business theory, but a fact provable in the records of any large industry.

The generation of study and experience that has entered into the building of our **complete** organization has created a **FORCE** in hardwood merchandising. This force works not towards cheaper lumber, but towards **better lumber** for the money you pay; towards rigid adherence to the needs of **your** business; towards closest possible cleavage to the **service** policies under which we sell our products.

Our organization offers you a wide selection in southern hardwood lumber and veneers and a maximum of consideration for **you** in any business you may decide we are qualified to handle.

70,000,000 feet a year of Hardwood Production

ANDERSON-TULLY CO.

MEMPHIS

TENNESSEE

Newsy Jottings of Interest

A. J. Taylor, of the Orillia Furniture Co., Orillia, has been elected alderman of that town.

The Quebec Central Railway Co., Sherbrooke, Que., contemplate the erection of a carpenter shop. Cost \$42,000.

The Nova Scotia Shipbuilding and Transportation Co., Halifax, are laying the keel of a three masted schooner.

The annual meeting of the Millwork Cost Information Bureau will be held in Chicago, on Wednesday, April 23.

A fire occurred in the mattress factory of the Yale Bedding Co., Montreal. Considerable damage was done. Factoring is being repaired.

J. E. Wilder, 354 Bleury Street, Montreal, is erecting a ten story building to be used for the manufacture and repairing of furniture.

The Pollock Mfg. Co., Kitchener, Ont., have recently let a contract for an addition to their factory, estimated to cost \$5,000.

W. J. Holden, Collingwood, Ont., has purchased a site for a sash and door factory and contemplates building in the near future.

The Wunder Furniture Co., of Kitchener, are adding an endless bed sander and veneer presses to their already complete equipment.

The Victoriaville Furniture Co., Limited, Victoriaville, Que., now that their re-organization has been completed are busily engaged in producing their regular lines.

The Fletcher Pulp & Lumber Company, Ltd., Sherbrooke, P. Q., are in the market for second-hand board matcher and an open back mailing machine.

The Thrift Broom Company has been incorporated with head office at Toronto, to manufacture brooms, whisks, brushes, etc. Capital \$40,000.

H. Bourgouin, wholesale lumber merchant, and F. Tremblay, of F. Tremblay & Co., lumber dealers and interior trim manufacturers, are on a trip to Havana.

Traversy Ltd., 136 Papineau Avenue, Montreal, P. Q., are negotiating for the purchase of an old mill which they plan to convert into a sash and door factory.

Mr. T. Z. Pariseau, of Pariseau Freres, Ltd., box makers and lumber merchants, has been elected an alderman of the city of Outremount, P. Q.

The Canada Broom & Brush Co., Ridgetown, Ont., are contemplating building an addition to their factory, in which new machinery will be installed.

The capital stock of Stevens-Hepner Co., Limited, manufacturers of brushes and brooms, Port Elgin, Ont., has been increased by supplementary letters patent from \$150,000 to \$500,000.

The B. C. Manufacturing Co., New Westminster, B. C., is discontinuing the manufacture of toys and is endeavoring to sell, as a going concern, the Pacific Toy Co., Ltd., a subsidiary concern.

A. F. Campbell & Son, Arnprior, Ont., contemplate the erection of a new sash and door factory as well as operating the plant they recently purchased. New equipment will be added.

The Export Mfg. Co., Ltd., New Westminster, B. C., will erect a modern box factory and instal latest machinery.

Plans are being prepared and work will commence in the early spring.

Messrs. A. Coates & Sons, planing mill operators and manufacturers, Burlington, Ont., are making some improvements, and are in the market for a box board machine suitable for matching $\frac{3}{8}$ in. stock.

Mr. Stewart F. Rutherford, managing director of the Dominion Box & Package Co., Ltd., Montreal, has been elected alderman for the City of Westmount. Mr. Rutherford headed the poll.

Mr. Alex McDonald, manager of the Magnet Toy and Novelty Co., of Bobcaygeon, recently consulted with the manufacturers committee of Peterboro and asked for certain concessions, with a view to moving his plant to their city. No definite decision was arrived at.

A spectacular fire occurred in the varnish plant of the Beaver Board Co., Alymer, Que. The loss amounted to about \$10,000 and is covered by insurance. As the varnish plant was in separate building the damage was confined to that department.

The labor appeal board has reversed the decision of the Board of Conciliation which awarded an increase to men employed as patternmakers, and recommends that, at any rate until peace is signed the minimum rate in contract shops should be 65c. per hour and in job shops 70c. per hour.

The Stratford Manufacturing Co., Stratford, have had some of their goods on display in London, England, for some time and are represented in the West Indies, South Africa and Australia. They have added several new lines, notably draft screens and children's furniture.

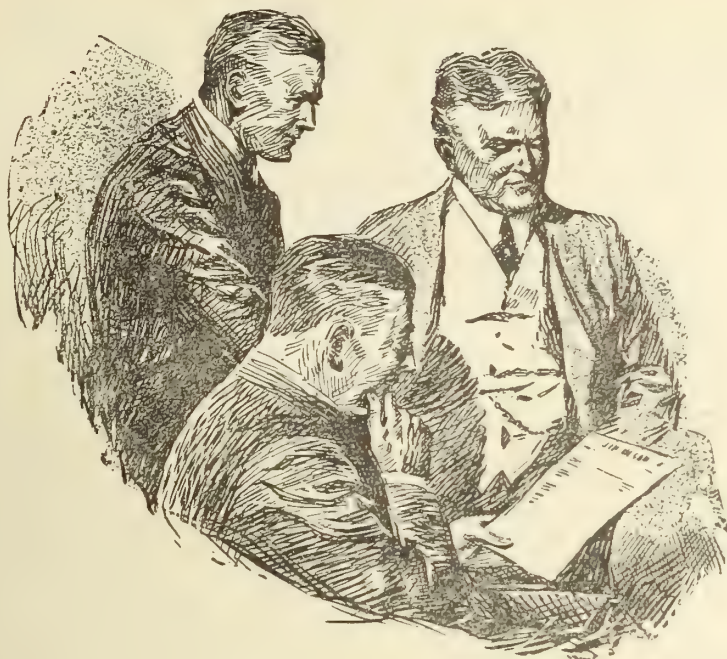
The Elgin Handle Co., of St. Thomas, have recently moved into the plant formerly occupied by John Heard & Co., manufacturers of bent woods for wagons and sleighs. The Elgin line comprises an assortment of handles of all kinds, such as pick and axe handles, hammer handles, etc.

William Baird, sales manager of the Canadian Machinery Corporation, Galt, died in Toronto recently. Mr. Baird travelled for the A. R. Williams Machinery Co., for years. He was well and favorably known in Galt, being an ex-alderman and for the last two years he held the position of school trustee.

The Agawa Timber Company, Ltd., has been incorporated with head office at Sault Ste. Marie, Ont., and capital stock of \$20,000, to carry on business as lumbermen, saw and planing millers, and manufacturers of lumber and woodenware. The provisional directors are T. C. Dinsmore and A. G. Fulton, of Sault Ste. Marie.

The Canadian National Railways has placed contracts among the different Canadian car manufacturers for about 3,000 cars. The Canadian Car & Foundry Co., and the Eastern Car Co., will handle the greater part of the new contracts. The National Steel Car Co., Hamilton, will make about 750 steel flat cars.

N. L. Henderson, St. Lambert, Que., manufacturer of toys and wood specialties, finding his present quarters too small, purposes erecting a two story brick factory in the near future. Mr. Henderson exhibited at the first Toronto Toy Conference and at one time he was engaged in work for the Munitions Board, making, in addition to shell boxes, tent pins, tent mallets and two piece tent poles. At present his line



*“We’ve certainly
cut down our
Labor Costs
since we
installed that
Time Meter”*

It was during the time when labor was scarce and skilled mechanics hard to get. Wages were going up. They found themselves confronted with a serious problem. They had been trying to keep an otherwise efficient organization going on the old, inaccurate system of time-keeping—the thumb-marked time book.

One day the superintendent suggested that they check up their labor costs more closely. The chief was only too pleased to do something that might tend to lower this ever-rising factor in production costs.

When they got at it, it didn’t take them long to discover where the old system was glaringly inaccurate and altogether too inefficient for the number of their employees.

The book-keeper suggested that by installing an

INTERNATIONAL TIME RECORDER

they would not only insure the accurate compilation of the time sheets, but it would relieve him of much of the work formerly connected with the old system and give him more time to devote to more important matters. It didn’t take them long to decide once they started to investigate.

It wouldn’t take you long to decide either if you are still keeping your labor by guesswork, and that is just what the old time-keeping system amounts to.

We have Time and Cost Recorders to suit every size plant or any kind of work done in that plant. If you are interested in reducing labor costs, let us demonstrate our systems. We’ll do it in your own factory, and if we can’t prove to you that they will produce the goods—well, they WILL produce, that’s all.

We’ve said a lot—give us a chance to prove it.

International Business Machines Company, Limited

Royce and Campbell Avenues

TORONTO

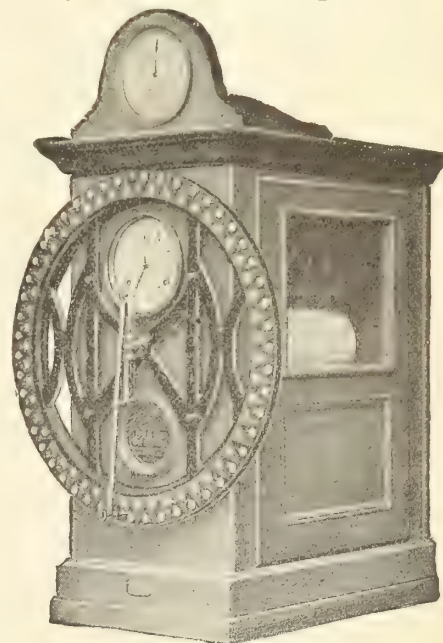
ONTARIO

FRANK E. MUTTON, Vice-President and General Manager

Also manufacturers of

Dayton Automatic Scales and Hollerith Electric Tabulators

Branch Offices, MONTREAL, VANCOUVER and WINNIPEG



includes children's kindergarten sets, shoo-fly and white enamel swan rockers, and a line of kitchen tables in white top and fall leaf.

Messrs. Faltenhine & Baker, Chester, N. S., intend to establish a woodworking factory and are in the market for machinery. They intend to adopt electric drive throughout and are desirous of getting information from manufacturers of equipment. They would also like to get in touch with users of wooden articles such as switch blocks, meter boards, dowels, etc.

The two storey sash and door factory of the Lumber & Construction Co., Ltd., 115 Fourth Avenue, Ville St. Pierre, P. Q., has been destroyed by fire, the office, boiler room and two sheds escaping. Besides the factory, a large quantity of lumber, estimated to be valued at \$20,000, was burned. The total loss is between \$40,000 and \$50,000, covered by insurance. The company will rebuild and re-equip after a settlement has been made with the insurance company.

The Brockville Lumber Company, Ltd., of Brockville, Ont., which has been in liquidation for several months, with H. W. Going as liquidator, has practically closed up its lumber business and sold the plant, land and buildings to new interests, who have re-organized the concern. They will carry on an up-to-date lumber yard along aggressive lines under the name of the Brockville Lumber Company. John Caruth, who has been with the organization for over 30 years remains with the new owners and will have charge of the yard end, selling and delivery. Miss Grace Joy, formerly secretary-treasurer of the old company remains in charge of the office and financial end. The planing mill to take care of all work for house building and a modern box making shop will look after boxes and shooks.

Information Wanted About Finishes

Winnipeg, Jan. 15, 1919.

Editor Canadian Woodworker:—

Please tell us where we can procure a fumed oak stain which will show the hard figure part of the oak much darker than the soft. Also a liquid preparation for effacing scratches, etc., on a varnish finish, to be used in a similar manner to French polish.

Sincerely Yours,

E. Willson.

The Jamestown Wood Finishing Co. say: If you require a fumed oak stain, to be used on a quartered oak, we suggest to you, to use a fumed oak toner in conjunction with a fumed oak acid stain. By using the fumed oak toner, giving a liberal application to the wood, and allowing same to thoroughly dry, and then sand well, (as this application will raise the grain of the wood), the natural sap, or tannin in same will be neutralized to a large extent, thereby enabling you to produce a perfectly even finish.

Following the first process, use one application of fumed oak acid stain. This will burn the flakes, or hard part of the wood, to a deep rich brown, leaving the softer portion of the wood considerably lighter. When this is thoroughly dry, follow with one medium coat of shellac, well sanded when dry, and then apply a coat of wax, either liquid or paste.

Regarding a medium for eliminating the cracks in varnish, we suggest a liquid composed of nine parts of wood alcohol, to one part benzol. Flow this on to the surface to be refinished, using a fine brush, in a thin, even coat, allowing same to dry, which will take about thirty-six hours time, sanding the surface very thoroughly, and apply a flowing coat of varnish. This condition of the cracking of varnish is due to the un-

equal contraction of the primer, or surfacer, and the succeeding coats of varnish.

The Marietta Paint & Color Co., say: Now, as regards obtaining a fumed oak effect, showing the growth of the wood, which is darker than the soft parts. That is obtained in two ways; one is in a fuming box, by putting the piece of furniture, or whatever it may be, in a closed chamber where strong ammonia is allowed to evaporate and the wood will absorb the fumes and get the results desired. The other way is to use a fumed oak acid stain, and we make such a stain, to produce the proper results.

Hamilton, Jan. 21, 1919.

Editor Canadian Woodworker.

Will you be kind enough to tell me how to make a mahogany stain, also an oil and dry color filler for white birch caskets? When I stain the white birch what will I put in the shellac to darken it?

These caskets are finished up quick and cheap, being made dark to hide the defects.

Yours truly,

George Mercer.

It seems to us that a satisfactory finish would be produced by the use of a combination filler and stain, which any manufacturer of finishing products can put out for you, in a semi-paste form, which will be reduced to a liquid consistency, with benzine, which would stain the wood, and at the same time fill up the pores. Allow this application to set, and wipe off the surplus across the grain of the wood, finishing with a mahogany colored surfacer, (which will be far cheaper than using shellac), and one or two coats of varnish. Rather than darkening white shellac, why not use Orange shellac, which would be very satisfactory, and somewhat cheaper than taking white shellac and adding coloring matter to darken it, which will make the cost of white shellac still more. The only objection to a mahogany colored surfacer, is its slowness in drying, as compared to shellac. However, same will dry to sand in from eight to twelve hours' time, varying according to atmospheric conditions. If you wish to darken the shellac there is a special dye on the market for that purpose.

Ocean Freight Rates Are Being Reduced

Ocean freight rates have been reduced on commercial traffic, and the British Government is releasing a certain amount of space for commercial cargoes. These two facts are the first indications of a return to normal in transatlantic shipping.

Rates all round show a considerable reduction, and the indications are that by the time the season opens again in the port of Montreal, freight rates will have been materially declined. Three months ago the rate on general cargo was \$6.50 per 100 pounds. After two months at this rate it was reduced to \$4.75 per 100 pounds, and recently there was a further reduction, and it now stands at \$1.50 per 100 pounds.

Shipping men state that there was no embargo on commercial traffic, and that the reported embargo only concerned the Government shipments on exports and imports, and in no way affects the regular commercial business of the country. The Government authorities have placed many temporary embargoes such as this upon exports and imports in order to clean house themselves before sending any more goods forward.

What's the Price ?

Every buyer asks the question—some base their **Purchase** entirely on the answer—Others attach less importance to **Price** but demand **Quality**.

Factory costs are governed more by the **waste** of material than cost of labor. **Waste** in your **lumber cutting** depends largely on the **Lumber Buyer**.

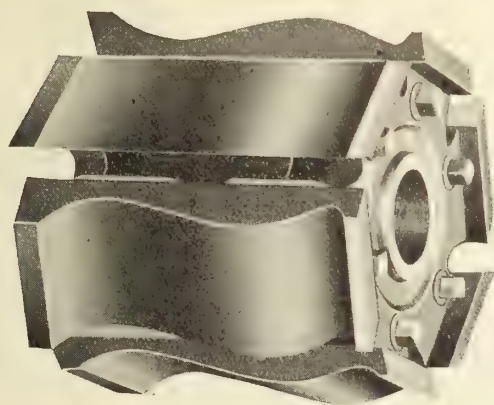
Our Price not always lowest—
"Quality Guaranteed."



The
KORN-CONKLING CO.
CINCINNATI, OHIO

The Diehl Adjustable Cutter Head

For Jointers, Shapers and stickers



**National Sweeper Company Has Used Diehl
Cutter Heads for Over Six Years
—Still Using Them**

All of their moulding machines and two of their shapers are equipped with Diehl Cutter Heads. They say: "We have previously used numerous styles of heads and knives, but have found your adjustable head the most satisfactory of any."

The G. M. Diehl Machine Works
Wabash, Indiana

"WELL BOUGHT IS HALF SOLD"

Read Down:

The list is worth perusal

1 Car—4/4" No. 2 Com. & Btr. Beech
1 Car—6/4" No. 1 Com. & Btr. Beech
2 Cars—4/4 No. 3 Com. & Btr. Birch
1 Car—10/4" No. 1 Com. & Btr. Birch
1 Car—16/4" No. 1 Com. & Btr. Birch
2 Cars—8/4" No. 1 Com. & Btr. Hard Maple
1 Car—12/4" No. 1 Com. & Btr. Birch
1 Car—16/4" No. 1 Com. & Btr. Hard Maple
1 Car—6/4" No. 2 Com. & Btr. Chestnut
1 Car—8/4" No. 1 Com. & Btr. Soft Elm
1 Car—12/4" No. 1 Com. & Btr. Soft Elm
2 Cars—4/4" No. 3 Com. & Btr. Basswood
5/8 x 3 & up Spruce Crating
1 x 3 & up Spruce Crating
1 x 2 Spruce Crating.

DRY STOCK

PROMPT SHIPMENT

May we quote ?

**Canadian General Lumber
Company, Limited**

712 Bank of Hamilton Bldg.
TORONTO

MONTREAL OFFICE: 203 McGill Bldg.

Selling

Graves, Bigwood & Co.'s
Lumber, Lath and Box Shooks

FOR SALE

2 Reynolds Automatic Screw Driving Machines, in first class condition.—A. Coates & Sons, Manufacturers, Burlington, Ont. tf

WANTED

Automatic variety wood turning lathe in working condition. Give particulars. Box 51 Canadian Woodworker, Toronto. 2

FOR SALE

No. 90 Berlin High Speed Matcher (Profilers).
No. 77 American High Speed Matcher.
13" Berlin 3 Drum Sander.
42" C.M.C. 3 Drum Sander.
60" Columbia 3 Drum Sander.
2-3 Box 53 Canadian Woodworker

Machines For Sale

1 Single Spindle Reversible Shaper,
1 Little Giant Pony Planer and Matcher.
These two machines must be moved within the next week, and are offered at an exceptional bargain. Terms cash.
Box 26, Canadian Woodworker, Toronto. tf.

FOR SALE**New Machines**

(Never Used)

Moulder, C.M.C. make, No. 303, 12" Surfacers, Cowan M-220, Single, Divided Rolls.
Rip Saw (Power Feed) C.M.C. No. 606. Will sell for 25% under Factory Price.
Also Sheldon No. 70 Fan and Separator.
Box 50, Canadian Woodworker, Toronto. tf.

FOR SALE

2 Broomhandle Machines, Ober Mfg. Co.
1 Sanding Machine, Ober Mfg. Co.
1 Skewer Dowel Machine, Canada Machinery Co.
1 Skewer Pointer.
All in first class condition.
Apply to Box 54 Canadian Woodworker, Toronto. 2-3-4

For Sale

Planer & Matcher, 24" Double Surface.
Planer & Matcher, Berlin 94.
End-Matcher, C.M.C. new.
Band Saw, 30", Bracket.
Sander, 42", Triple Drum.
Sanders, Disc and Drum.
Sander, Belt, Wysong & Miles.
Buzz Planer, 12" Preston.
Moulder, 10", four side, latest pattern.
Shaper, Tenoner, Mortiser.
Saws, Rip and Combination.
Nailers, Morgan 6 & 8 Channel.
Screw Drivers, Reynolds.
Prices right.

Cowan and Company of Galt, Limited.
2 Galt, Ontario.

For Sale

Box Board Printer 3-color
Box Dovetail machinery (full set).
Box Lock Corner Machinery (full set).
Box Board Matcher (Cowan).
Box Board Squeezer 30" Mereen
Berlin 54"—No. 289 Vertical Band Resaw.

Berlin 64" Horizontal Slab Resaw.
Mereen Horizontal Slab Resaw.
Mereen Hopper Feed Resaw.
C.M.S. 48"—No. 708 Band Resaw.
Cowan 48"—M—76 Band Resaw.
Double Surfacers (Berlin and Fay).
Chain Mortiser (2).
Moulders 13", 12", 8" and 6".
Buzz Planers 24", 16" and 12".
Corliss Engines 18", 16" and 12".
100 H.P. Boiler (2).

2-3 Box 52 Canadian Woodworker.

Mattress Press Wanted

A Mattress Press of modern design, new or second hand, also Ticking, Cotton Felt and other materials for manufacture of mattresses.—Box 55, Canadian Woodworker. 2

Admission of Air to Furnace Fires

The wasteful burning of coal takes, in large measure, the form of incomplete combustion. To burn 1 pound of the average coal requires about 14 pounds of air. The air is just as necessary for the combustion as is the coal. When the fuel bed is kept level and 4 to 6 inches thick, only about 7 pounds of air can be supplied through the fuel bed for each pound of coal burned; increasing the rate of air supply merely makes the coal burn faster. The other 7 pounds has to be supplied immediately over the fire. The air supplied through the fuel gasifies the coal, and the gas must then be burned in the combustion space. This is true, no matter how much air we try to force through the fuel bed; if we force through 7 pounds of air we gasify 1 pound of coal; if we force through 70 pounds, we gasify 10 pounds of coal, and if we force through 700 pounds, 100 pounds of coal is gasified, and so on. In other words, the amount of air supplied through the fuel bed determines only the rate of combustion. The completeness of the combustion is determined by the amount of air that is added and mixed with the combustible gases over the fuel bed. The gases mixed with the air burn in the combustion space, and the flames are the visible evidence of this burning of the gases. If there were no gases burning over the fuel bed, there would be no flame.—(U. S. Bureau of Mines, Technical Paper No. 205.)

FOR SALE

Battery of "Bowser" Tanks for Finish Room. Good Condition.

t.f. Box 32, Canadian Woodworker

PETRIE'S LIST**of NEW and USED WOOD TOOLS**

FOR IMMEDIATE DELIVERY

Wood Lathes

20" Sidney, "Famous."
16" Canada Machinery Corporation.
16" Chamberlain, back geared.
16" Sidney, "Famous."
14" Sidney, "Famous."

Wood Planers

30" Whitney pattern surfacer.
26" double surfacer.
24" Champion planer and matchers, moulding attachment (2).
24" Galt, planer and matcher.
24" Hermance, double surfacer.
24" MacGregor-Gourlay.
24" Sidney, "Famous," single surfacer.
18" Sidney, Famous.
16" Buzz, with slotted head.
12" Buzz, with slotted head.

Band Saws

36" MacGregor-Gourlay, circular, re-saw.
36" West Side, pedestal.
30" Ideal, pedestal (4).
30" Cowan, bracket.
30" Goldie & McCulloch, bracket.
27" Sidney, "Famous," pedestal.

Saw Tables

No. 2 Famous, variety.
No. 2 Crescent, boring attachment.
No. 6 Sidney, "Famous," combination.
MacGregor Gourlay railway cut-off.
Greenlee automatic cross-cut.
7" Fay, swing saw.
Canadian, steel frame, pole saw.
Vaughan, portable, drag saw.
Champion, portable drag saw.

Mortisers

Cowan, upright, power.
Eas, upright, power.
Galt upright, compound table.
No. 1 MacGregor-Gourlay upright, power.
No. 5 New Britain, chain.
No. 2 Smart, foot power.
No. 1 Smart, foot power.

Moulders

13" Clark Demill four-side.
12" Cowan four side.
12" Woods four-side, inside.
10" Houston four side.
8" Dundas four-side.
7" Cowan double head.
6" Cowan four side.
6" Dundas sash stickler.

Clothespin Machinery

Humphrey automatic lathes (5)
Humphrey double slotters (3)

Miscellaneous

No. 58 Crescent, universal, woodworker.
No. 30 Famous, universal woodworker.
Fay, horizontal, boring machine.
No. 920 C. M. C., post boring machine.
No. 2 Defiance, belt sander.
Fay & Egan 12 spindle dovetailer.
MacGregor Gourlay 12 spindle dovetailer.
No. 1 Ballantine dowel machine.
M135 Cowan, sash and door relisher.
Dundas double-head tenon machine.
20" Superior saw arbors.
Hall's automatic shingle machine.
Waterous lath machine.
26" Dominion lath trimmer.
6' Linderman, automatic, glue jointer.

Ask to see our stock of second-hand supplies—belting, pulleys, machine shop equipment, mill supplies, pipe and fittings. This material is as good as new, and will save you money.

H. W. PETRIE, LTD.
Front St. W., Toronto, Ont.

A NEW CASTER

The **ACME PLATE CASTER**

Many dealers have been buying our casters for years—some ever since this company first started making them—and we have been established for eighty-four years.

It has been the enduring quality of our products that has meant so much to dealers—and to ourselves.

In this new Acme Plate Caster, we offer one of unusual strength, rigid structure, ease of swiveling, positive space in the rollway, and an extra large axle. It may be had in either plate or gripneck—sizes 1-3-5-7-8-9.

"Compact and sturdy" describes this caster.

It is one you can recommend for durability—the caster to give long service under heavy loads. Prices sent upon request.



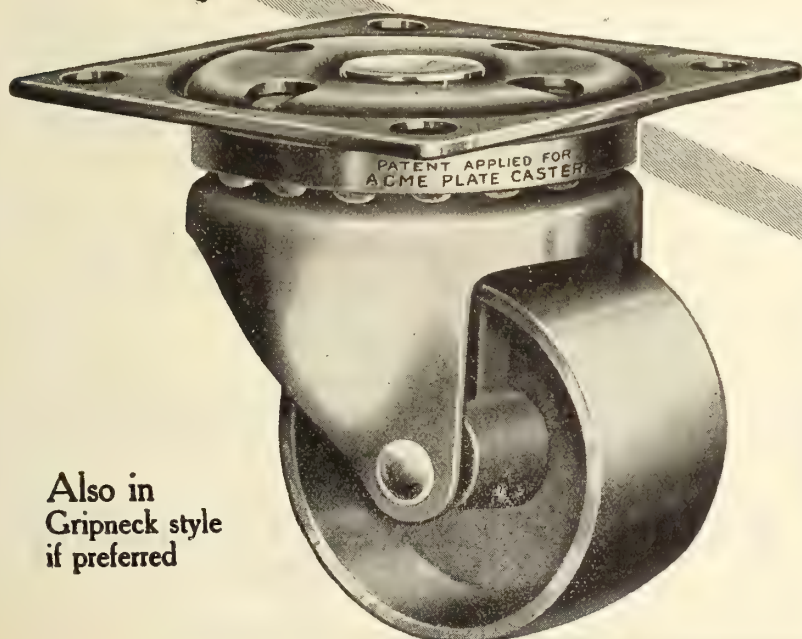
FOSTER, MERRIAM & CO.

Meriden,
Connecticut

*New York Office
225 Canal Street*



*Standardized by
84 years of service*



Also in
Gripneck style
if preferred

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VEGETABLE VENEER

GLUE

Quality—None Better

We guarantee that the process used in the manufacture of Kane Vegetable Veneer Glue, and also the dissolving and usage of same by the consumer, do not infringe any patents, and particularly the patents recently construed by the Court of Appeals of the Seventh Circuit, or the Decree of the U.S. District Court at Chicago, signed August 5, 1918.

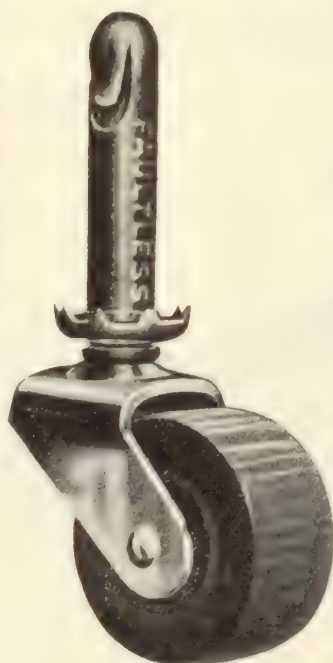
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Use FAULTLESS Casters

A WORD FROM
YOU PUTS ALL
OUR CASTER
EXPERIENCE
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FAULTLESS
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Casters that roll easily across the floor—and smoothly. No chatter—no unsteadiness.

Simple construction—no complicated parts to get out of order, nothing to retard easy movement. Strong—plenty of metal in required places to resist strains.

Silent—neat appearing—a real necessity to YOUR furniture, these FAULTLESS CASTERS.

Made with lignum-vitæ, steel, leather, fibre and felt wheels, in all finishes.

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EVANSVILLE, INDIANA

Perkins Vegetable Glue

No other glue can be like Perkins Glue

The Standard Veneer Glue

Our Patent Process fixes that

Perkins Quality and Perkins Service

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Uniform, Guaranteed, Satisfactory Glue

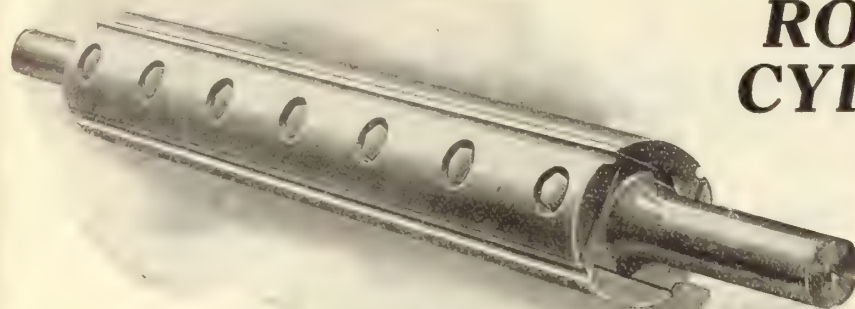
Process and Product Patents covering Perkins Glue were granted July 2nd and March 19th, 1912, and are held valid and infringed by United States Circuit Court of Appeals. Corresponding Canadian Letters Patent were granted July 9th, 1912.

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NAME and REPUTATION of
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We are also dealers in new and rebuilt Woodworking Machinery.

PATENTED ROUND SAFETY CYLINDER HEAD

Two and four-knife heads for jointers. Round heads for moulders, top, bottom and side heads. Six-knife heads for flooring and surfacing machines. Write for particulars.

Tawney Machine Co.
WILLIAMSPORT, PA.

You Have Paid for an Installation of Chapman Double Ball Bearings

in Your Factory over and over again, BUT

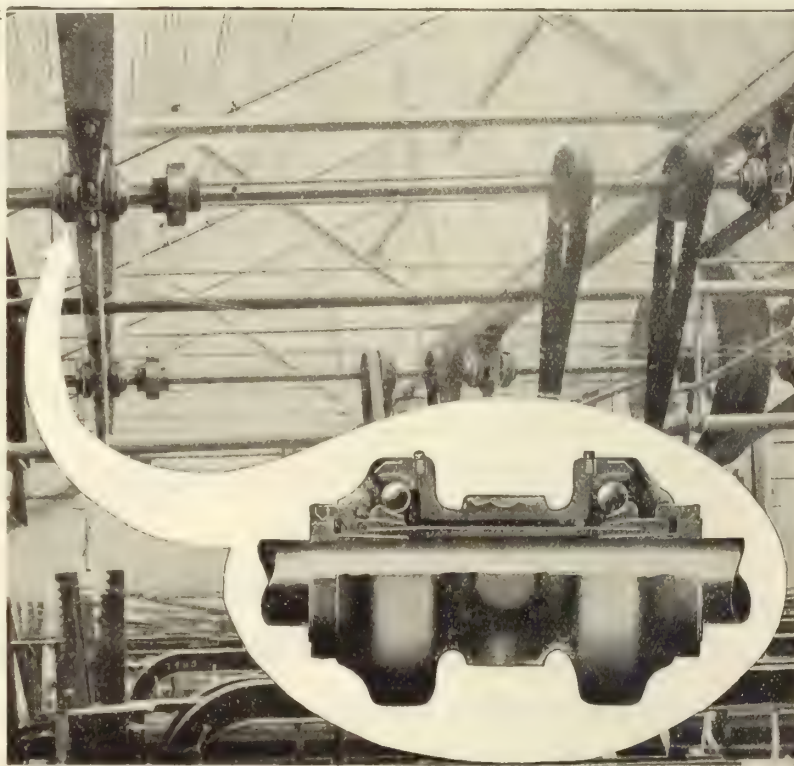
HAVE YOU GOT THEM?

Ordinary line shafting wastes 15 per cent. to 60 per cent. of power.

Line shafting equipped with Chapman Double Ball Bearings will eliminate about 75 per cent. of the friction, thus averaging a total saving of from 15 per cent. to 30 per cent.

Chapman Double Ball Bearings fit any adjustable hanger and require oiling and attention only once a year. No extra equipment required to install.

Write to-day for full particulars



The Chapman Double Ball Bearing Co. of Canada, Limited
Toronto 339-351 Sorauren Ave. **Ontario**
American Branch: The Transmission Ball Bearing Co., Inc., 32 Wells St., Buffalo, N.Y.

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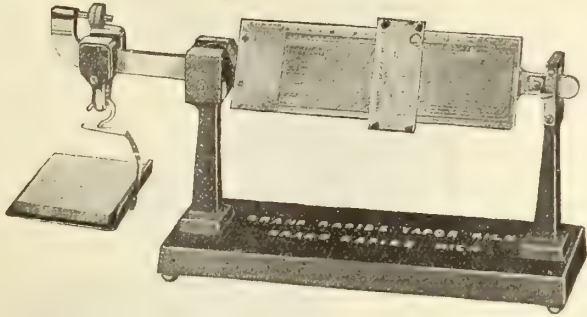
The following books are offered at special prices subject to previous sale:

- Saw Fitting Manual, a treatise on the care of saws and knives. Deals with everything in the saw and knife alphabet, from adjustments to widths. 144 pages. Price \$2.00.
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- Handrailing Simplified, by An Experienced Architect. Published by William T. Comstock, New York. 52 pages, illustrated. Price 50c.
- "Carpentry," by Ira S. Griffith. Published in 1916 by The Manual Arts Press. 188 pages, illustrated. Price \$1.00.

- "Wood and Forest," by William Noyes. Published in 1912 by the Manual Arts Press. 309 pages, illustrated. Price \$2.00.
- Cabinet Making, by J. H. Rudd. Published by Grand Rapids Furniture Record Company. 210 pages, illustrated. Price \$1.50.
- How to Join Mouldings; or, The Arts of Mitering and Coping, by Owen B. Maginnis. Published by William T. Comstock, New York. 72 pages, illustrated. Price 50c.
- The Preservation of Structural Timber, by Howard F. Weiss. Published in 1915 by McGraw-Hill Book Co., 312 pages, illustrated. Price \$3.00.
- Utilization of Wood-Waste (Second Revised Edition), by Ernst Hubbard. Published in 1915 by Scott, Greenwood & Sons, 192 pages, illustrated. Price \$1.50.
- Seasoning of Wood; A Treatise of the Natural and Artificial Processes Employed in the Preparation of Lumber for Manufacture, with Detailed Explanations of its Uses, Characteristics and Properties, by Joseph Wagner. Published by D. Van Nostrand Co., in 1917. 274 pages, illustrated. Price \$3.00.
- "The Kiln Drying of Lumber," a practical and Theoretical Treatise, by Harry Donald Tiemann, M.E., M.F. Just published, by J. B. Lippincott Co. 316 pages, illustrated. Price \$3.00.

WOODWORKER PUBLISHING CO., LIMITED, 345 Adelaide Street W., Toronto, Ont.

Grand Rapids Lumber Tester



Test your lumber for moisture content:

1. When you buy it, to be sure you are getting what you want.
2. When you put it in your kiln, to see how long it should dry.
3. When you empty your kiln, to insure properly dried lumber.

Don't guess at it. Guessing is a poor game.
So simple anyone can use it.
Is direct reading.

Requires no figuring or computations.
No charts or rollers to bother with.
Equally applicable to testing any material for moisture content.
Accurately made, graduated to metric system, and can be used for ordinary weighing.

Designed and manufactured for the

Grand Rapids Vapor Kiln

Made by **Grand Rapids Veneer Works**
Grand Rapids, Mich. **Seattle, Wash.**

We have the best facilities for the
Manufacture of

SPRING MATTRESS and CAMP COT FRAMES

also **DIMENSION STOCK**
in Maple, Beech and Birch

Write for prices.

John P. Newman Sons'
WIARTON, ONT.

Wire, Wire Bale Ties and Wire Products

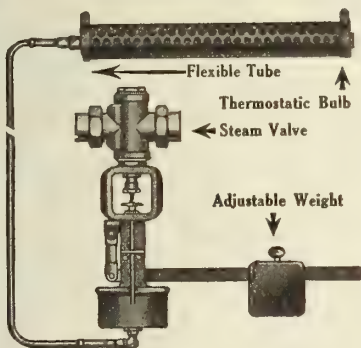
Bale ties, Heading ties, Lath ties, Hardwood
Flooring ties, Wire Nails, Flat Steel or Wire
Barrel hoops. All sizes of Fine wire in Bright,
Tinned or Galvanized, manufactured to order.

Laidlaw Bale-Tie Co., Ltd.

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Harry F. Moulden & Sons, Winnipeg, Man.

Head Office and Works: **Hamilton, Canada**

How Will You Meet Keener Competition?



Powers Regulator No. 15

This is the regulator that has been attached to over 1,000 Dry Kilns in the last year, and has increased their output at least 25%, besides reducing costs by a like percentage.

If you have one kiln that is not automatically regulated, you are losing money on every load of lumber you run through that kiln.

Ask for Bulletin 142.
Our other Regulators, for other purposes, are just as effective.

In returning from war-work to normal business, it must not be overlooked that there is going to be mighty keen competition from now on—not only among ourselves, but with foreign business, which quite naturally will now exert itself to the utmost to regain its former standing.

Keen competition requires keener management at the manufacturing end, because the extra **cost** of **getting** business must be **saved** in the **shop**.

In the dry kiln, glue kettle, varnish and dry rooms, even in the hot water tank—wherever **heat** is a factor in your manufacturing processes, there is a chance to **save**, and improve **results** by the application of Automatic Heat Control.

Manual control is expensive, and always inaccurate. Automatic control is economical and always exact.

Manual control **corrects** a wrong condition—sooner or later—which automatic control would **prevent**.

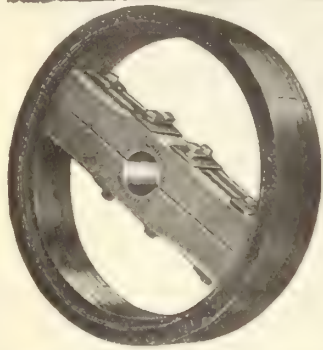
Temperature regulation has been our sole business for over thirty years. We shall be glad to apply our experience for your benefit, and show you a way to avoid waste of coal, labor, time, and material.

The CANADIAN POWERS REGULATOR Co., Ltd.

Specialists in Automatic Heat Control

115 BAY STREET - TORONTO, ONT.

BERNARD



Wood Split Pulley

With greatest care we select and treat the materials to be built into the

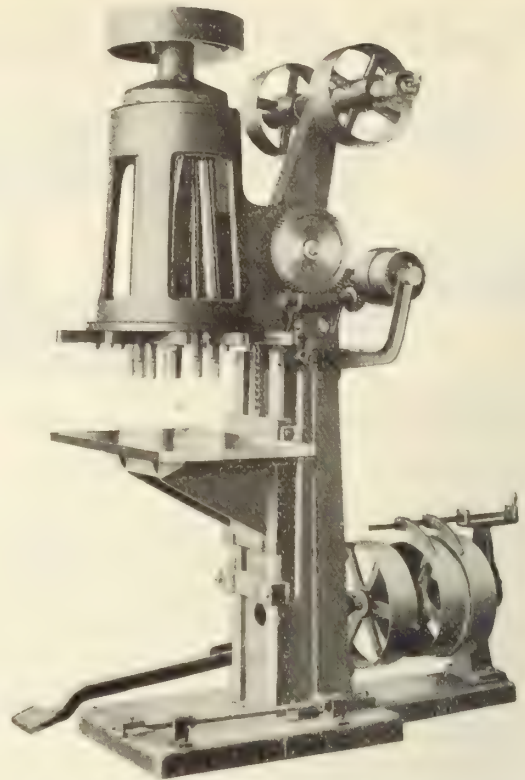
Bernard Wood Split Pulley

It is bound to give you entire satisfaction for years. Write for price and service particulars.

The A. Bernard Industrial Co.

Manufacturers of High Grade Power Transmission Appliances

Office and Works - Fortierville, Que., Canada

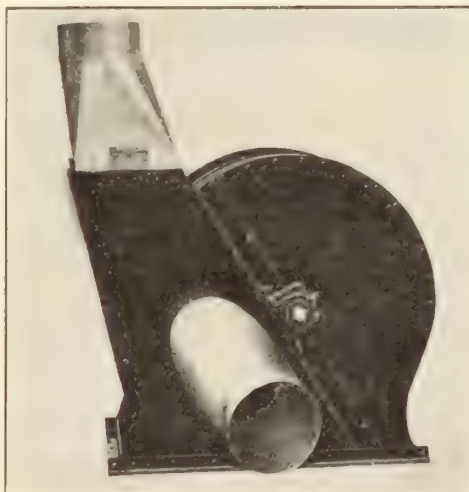


Root Universal Borer—Multiple Spindle

Bores 4 to 30 holes at once and just as quick as only one hole. The profit is yours—ours, the pleasure to serve.

B. M. ROOT CO. - YORK, Pa.

"Foster Fan" Service



Patented

The service which is rendered by "Foster Fans" is undoubtedly the most efficient. It handles wet or dry material with the same rapidity, thus making it an ideal fan for any place for which a fan is needed. The fan wheel is so constructed that material entering the fan is immediately discharged without passing through or around the wheel. "Foster Fans" are practically indestructible. Write us for our bulletin explaining the merits of the "Foster Fan" more fully and giving a list of users.

Toronto Blower Company

156 Duke St. - Toronto, Ont.



Thos. B. Young, General Manager

Hugh C. MacLean, Limited

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Footwear Canada Lumberman
Contract Record Electrical News

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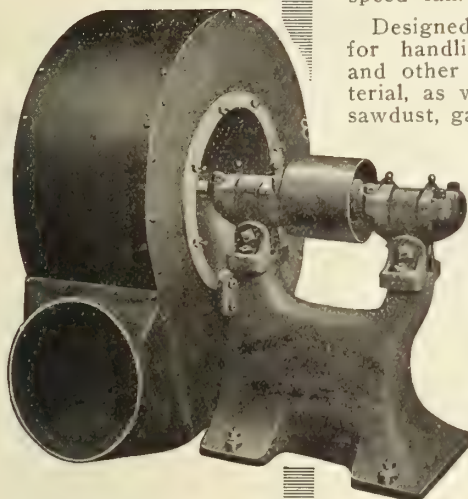
Toronto, Montreal, Winnipeg,
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From 15 to 25 per cent. less power is required to drive a

**CANADIAN
Slow Speed
Reversible
Mill Exhauster**

than any other high-speed fan.

Designed especially for handling shavings and other stringy material, as well as bark, sawdust, gases, etc.



Write for
Catalog 256 13

**Canadian
Blower &
Forge Co.,
Limited**

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Ont.

When you spend your money

FOR

**L
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AND

You have to dry this lumber to A-1 grade before you can sell it at a profit—Isn't it vitally necessary that you have a kiln that will dry this in first-class condition, with the least possible percentage of loss?

The National Dry Kiln

will do this.

Don't you think it will pay you to investigate?

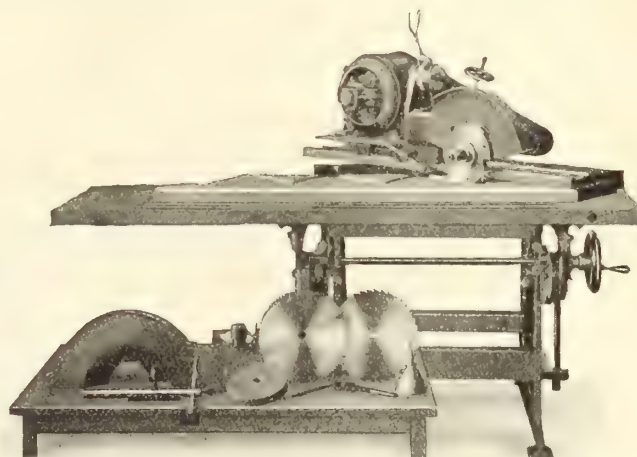
THE NATIONAL DRY KILN CO.

1117 East Maryland St., INDIANAPOLIS, Indiana

Have you made arrangements
for your

Elliot Woodworker?

***Do not delay too long as we expect a
big business in the Spring.***



Pat. 1910 and 1914

We are also sending machines to England and France for reconstruction.

It is not necessary to say what this famous machine will do, as it is known all over America. It will save you from 20 per cent. to 30 per cent. on labor costs. Do you do \$20,000.00 worth of carpenter work per year? You will save more than \$5,000.00 by the use of this machine. Can you afford to do without it?

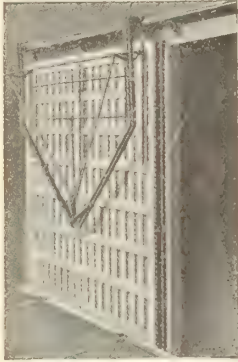
Write now for catalogue and prices.

Elliot Woodworker Co.,

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The Door Carrier System



Makes your dry-kiln doors steam-tight and saves time, heat, trouble and money.

Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbet-joint, where it is held steam-tight by its own weight. Applicable to old or new kilns.

Ask for catalogue.

**DRY KILN
DOOR CARRIER CO.**

1117 Cornell Ave.
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Prove for yourself the **sturdy construction** and **excellent material** which we claim as the features of our

**Air
Compressors**



HAMILTON MOTOR WORKS, LIMITED
HAMILTON CANADA

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Many letters reach us from subscribers enquiring where a certain machine, a certain kind of lumber or veneer, or some other class of goods, can be obtained. We can usually supply the information. We want to be of service to our subscribers in this way, and we desire to encourage requests for such information. Make use of this form for the purpose.

Date.....1918

CANADIAN WOODWORKER
AND FURNITURE MANUFACTURER,
345 Adelaide Street West, Toronto.

Please tell us where we can procure

Name

Address

The Peter Hay Knife Co., Ltd.



Manufacture the Best
PLANER KNIVES

and **CUTTERS**

OF ALL DESCRIPTION

The Peter Hay Knife Co., Limited
GALT, ONTARIO

PRESSES

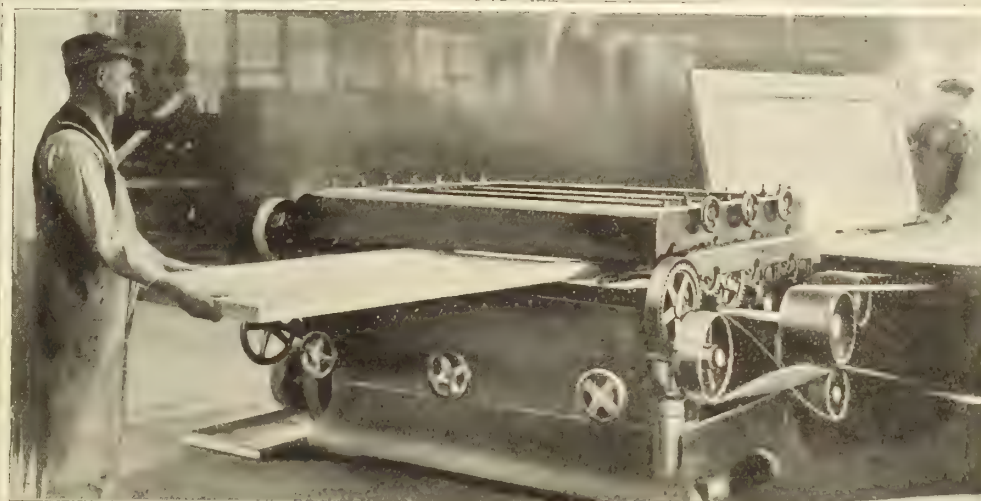
For Veneer and Veneer Drying

Made in Canada

William R. Perrin

Limited
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Carborundum Brand Garnet Paper and Cloth Will Help Your Product, Your Production and Your Profits



IT is simply because Carborundum Brand Garnet Products are so carefully made of the highest possible quality of materials. Every inch of the paper and cloth is uniformly coated with the hardest, sharpest, cleanest of North River Garnet.

The surface isn't dense. It is open, free cutting. The grains get a real chance to cut and carry away the removed stock.

There is little or no chance of the surface filling. Another point in favor of Carborundum Brand is the flexibility of the paper and cloth.

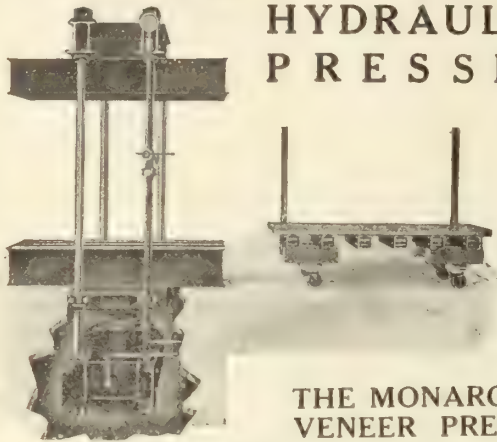
It won't crack or peel on the sander roll—not even when you work it over sharp angles.

*A test in your plant will complete
the story of the high efficiency of
Carborundum Brand Garnet
Products*



The Carborundum Company
Niagara Falls, N. Y.

FARQUHAR HYDRAULIC PRESSES



THE MONARCH VENEER PRESS

CONSIDER THESE FEATURES.

Heavy Steel Strain Rods.
Steel Cylinder and Detachable Saddle.
Cylinder Repackable without removing Ram.

Double Steel Head and Base.
Quick-acting Pump, Rigid Construction.
Operating Valve at Press.
Improved Retainers.

OUR HYDRAULIC VENEER PRESSES are built to suit all requirements. All proportions are very liberal, while material and workmanship are the best throughout.

Pressure of 100-lbs. to the square inch is applied to the veneering surface. Stock is handled by the renowned retainer system, unsurpassed for both efficiency and economy.

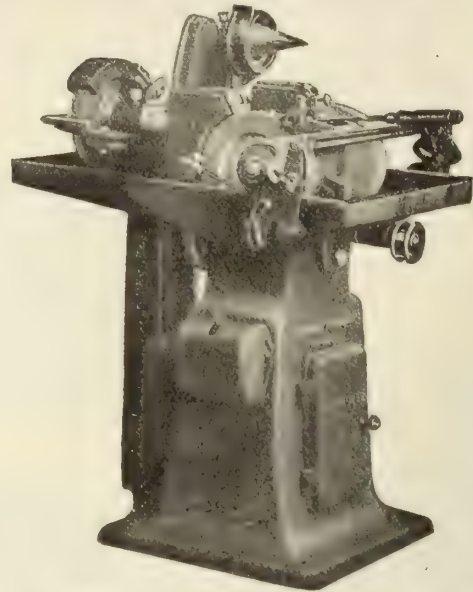
With our process, but five minutes intervene from the time the car enters the press until the stock is released and the press is ready for the next load.

Catalogue, giving full particulars as to sizes and specifications, free on request. We also manufacture all kinds of special Hydraulic Presses to order. Write us concerning your requirements.

A. B. FARQUHAR CO., LTD., Box 171, YORK, PA.

Mummert-Dixon Oilstone Grinders

THE MODERN EDGE TOOL SHARPENING MACHINE
THE STANDARD FOR ALL WOOD-WORKING SHOPS



No. 481 MOTOR OR COUNTERSHAFT DRIVE

An automatic attachment for grinding long knives can be furnished with this machine.

THE FIVE LEADING FEATURES

1. Coarse Oilstone Wheel. 2. Fine Oilstone Wheel.
3. Grinding Cone. 4. Leather Wheel. 5. Emery Wheel.
ALL AT YOUR FINGERS ENDS

Send for full descriptive bulletin.

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Furniture Hardware

Brass Pulls—all the period designs, Desk Pulls, Label Holders, Card Index Rods, Hat Hooks, Desk Slides, Brass Sockets, Sliding Casters, etc.

Talking Machine Hardware

Lid Supports, Needle Cups, Needle Rests, Door Catches, Continuous Hinges, Sockets, Sliding Casters, Tone Rods, Knobs, etc.

Trimmings for Smokers' Stands

Weber-Knapp Company
Jamestown, N. Y.

Morehead Back to Boiler SYSTEM

They Saved
25% in Fuel
and 50% in
Repairs

SO WRITES Mr. Wm. H. Turner, secretary and treasurer of The Easton Furniture Company, of Easton, Md., after giving the "Morehead" system a thorough trial.

Until you are draining the condensation from your kilns and returning it—every drop—to the boilers at the original temperature—you are wasting heat units that cost you DOLLARS to produce.

Stop That Waste!

Rejuvenate your entire steam plant by making the inexpensive "Morehead" system a part of it. Save fuel by bringing the pure condensation directly back to the Boilers HOT!

Save repairs by eliminating forever the necessity for the wasteful and constantly out-of-order steam pump. The simple, easily installed "Morehead" system will much more than pay for itself the first year of use.

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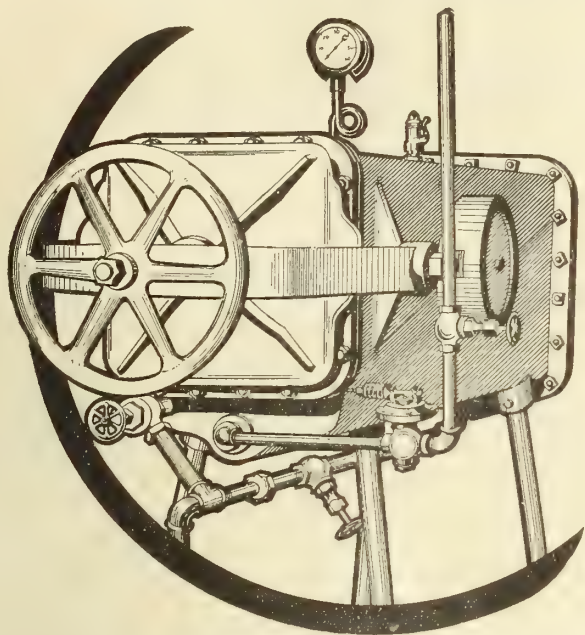
The "Morehead" book shows actual photographs of some interesting installations. Don't you want your copy at once?

Canadian Morehead Mfg. Co.

Dept "I"

Woodstock - Ontario

Wood Steaming Retort



Wood Bending Manufacturers:

This is one of our

Perfection Retorts

which we guarantee will save you

50% Less Breakage

in your bending department than your present process; that your stock will dry in your forms or presses in one-third less time; that you will have no stained stock; that your stock will retain its shape much better after being bent; that it will dry in your dry-kiln in one-half less time and that your steam consumption will be reduced at least 90 per cent.

The door can be opened and closed in ten seconds, and it is steam and water tight and for this reason can be placed anywhere in your factory.

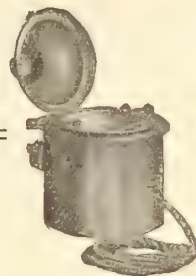
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**Perfection Wood Steaming
Retort Co.**

PARKERSBURG - WEST VIRGINIA

1 Quart Size



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INTERNATIONAL
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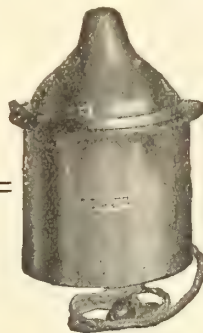
SECOND—They are absolutely safe, clean and free from fire risk, doing away with leaky steam pipes, water-bath, burnt glue, etc., and the fireless cooker principle eliminates radiation losses.

THIRD—They give three degrees of constant, even heat which insures proper mixing and density. This one feature alone will soon demonstrate its desirability in preventing joints from coming apart.

FOURTH—They operate from any lighting circuit.

Many more desirable features are fully explained in our booklet. Write for it TO-DAY.

Made in all sizes from 1 pint to 50 gallons.



4-Quart Size

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MANUFACTURERS
ELECTRICAL HEATING APPLIANCES

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The "Canadian Woodworker" Buyers' Directory

An Index to the Best Equipment and Supplies

AIR BRUSH EQUIPMENT

DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

AIR COMPRESSORS

Hamilton Motor Works, Hamilton, Ont.

BALL BEARINGS

Chapman Double Ball Bearing Co., Toronto.

BALUSTER LATHES

Garlock-Walker Machinery Co., Toronto, Ont.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.

BAND SAW FILING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

BAND SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, Que.
Yates Machine Co., P. B., Hamilton, Ont.

BAND SAW MACHINES

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

BAND SAW STRETCHERS

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

BENDING MACHINES

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Perfection Wood Steaming Retort Company, Parkersburg, W. Va.

BLOWERS

Canadian Blower & Forge Co., Kitchener, Ont.
Sheldons, Limited, Galt, Ont.
Toronto Blower Co., Toronto, Ont.

BLOW PIPING

Canadian Blower & Forge Co., Kitchener, Ont.
Sheldons, Limited, Galt, Ont.
Toronto Blower Company, Toronto, Ont.

BOILER ROOM EQUIPMENT

Canadian Morehead Mfg. Co., Woodstock, Ont.

BORING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Reynolds Machine Co., Massillon, Ohio.
Root Company, B. M., York, Pa.
Yates Machine Co., P. B., Hamilton, Ont.

BOX BANDS

Laidlaw Bale-Tie Co., Hamilton, Ont.

BOX MAKERS' MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Neilson & Company, J. L., Winnipeg, Man.

Preston Woodworking Machinery Company, Preston, Ont.

Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CABINET PLANERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CARS (Transfer)

Sheldons, Limited, Galt, Ont.

CARVING MACHINES

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.

CASTERS

Faultless Caster Co., Evansville, Ind.
Foster, Merriam Co., Meriden, Conn.
Weber, Knapp Co., Jamestown, N.Y.

CLAMPS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Neilson & Company, J. L., Winnipeg, Man.
Preston Woodworking Machinery Company, Preston, Ont.

CRATING LUMBER

Elgie-Jarvis Lumber Co., Toronto, Ont.

CUT-OFF SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CUTTER HEADS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Diehl, G. M., Wabash, Ind.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hawker Mfg. Co., W. S., Dayton, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Shimer Cutter Head Co., Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CYLINDER HEADS

Cowan & Company, Galt, Ont.
Tawney Machine Co., Williamsport, Pa.

DIMENSION STOCK

Newman Sons, John P., Warton, Ont.

DOOR CARRIERS FOR DRY KILNS

Dry Kiln Door Carrier Co., Indianapolis, Ind.

DOVETAILING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.

DOWEL MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Dauber-Bell Machine Co., Oshkosh, Wis.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Hawker Mfg. Co., W. S., Dayton, Ohio.

DOWELS

Canada Wood Specialty Co., Ltd., Orillia, Ont.

DRY KILNS

Canadian Blower & Forge Co., Kitchener, Ont.
Grand Rapids Veneer Works, Grand Rapids, Mich.
National Dry Kiln Co., Indianapolis, Ind.
Sheldons, Limited, Galt, Ont.

DUST COLLECTORS

Canadian Blower & Forge Co., Kitchener, Ont.
Sheldons, Limited, Galt, Ont.
Toronto Blower Company, Toronto, Ont.

DUST SEPARATORS

Canadian Blower & Forge Co., Kitchener, Ont.
Sheldons, Limited, Galt, Ont.
Toronto Blower Company, Toronto, Ont.

EDGERS (Single Saw)

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

EDGERS (Gang)

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

END MATCHING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

EXHAUST FANS

Canadian Blower & Forge Co., Kitchener, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Sheldons, Limited, Galt, Ont.
Toronto Blower Company, Toronto, Ont.

FEED ATTACHMENTS

Garlock-Walker Machinery Co., Toronto, Ont.

FLOORING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

FLUTING HEADS

Fay & Egan Co., J. A. Cincinnati, Ohio.

FURNITURE CARVINGS

Decorators Supply Co., Chicago, Ill.

FURNITURE LEATHER

Eagle-Ottawa Leather Co., Grand Haven, Mich.

FURNITURE TRIMMINGS

Faultless Caster Co., Evansville, Ind.
Foster, Merriam Co., Meriden, Conn.
Weber, Knapp Co., Jamestown, N.Y.

GARNET PAPER AND CLOTH

Carborundum Co., Niagara Falls, N.Y.

GRAINING MACHINES

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDING WHEELS

Carborundum Co., Niagara Falls, N.Y.

GLUE

Bury & Co., Robt., Toronto, Ont.
Canada Glue Company, Brantford, Ont.
Kane Manufacturing Co., Chicago, Ill.
Perkins Glue Company, South Bend, Ind.

GLUE CLAMPS

Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Neilson & Company, J. L., Winnipeg.

GLUE HEATERS

Fay & Egan Co., J. A., Cincinnati, Ohio.
International Electric Co., Indianapolis, Ind.
Jackson, Cochrane & Company, Kitchener, Ont.
Pringle, R. E. T., Toronto, Ont.

GLUE JOINTERS

Canada Machinery Corporation, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

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300,000 ft. 5/4, 6/4 and 8/4 x 4 and up No. 2 Cull
White Pine.
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The Pedwell Hardwood Lumber Co.

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CANADIAN HARDWOODS

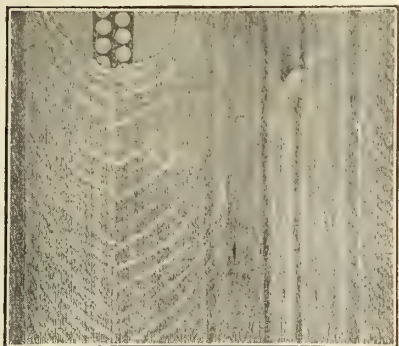
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for Crossbanding



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Fans have
characteristics
that adapt
themselves
to the ser-
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Planing
Mill or
Wood-
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"Canadian Woodworker" Buyers' Directory—Continued

GLUE SPREADERS

Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GLUE ROOM EQUIPMENT

Perrin & Company, W. R., Toronto, Ont.

GRINDERS (Cutter)

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.

GRINDERS (Knife)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GRINDING WHEELS

Carborundum Co., Niagara Falls, N.Y.

GROOVING HEADS

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.

GUARDS

Cowan & Company, Galt, Ont.

GUM LUMBER

Aberdeen Lumber Co., Pittsburg, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
Anderson-Tully Co., Memphis, Tenn.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Brown & Co., George C., Memphis, Tenn.
Churchill-Milton Lumber Co., Louisville, Ky.
Cornelius Lumber Co., St. Louis, Mo.
Gum Lumber Association, Memphis, Tenn.
Heyser Lumber Co., W. E., Cincinnati, Ohio.
Holly Ridge Lumber Co., Louisville, Ky.
Paepcke-Leicht Lumber Co., Chicago, Ill.
Probst Lumber Co., Cincinnati, Ohio.
Thomas & Proetz Lumber Co., St. Louis, Mo.
Wisconsin Lumber Co., Chicago, Ill.

GUMMERS, ETC.

Fay & Egan Co., J. A., Cincinnati, Ohio.

HAND PROTECTORS

Fay & Egan Co., J. A., Cincinnati, Ohio.

HAND SCREWS

Fay & Egan Co., J. A., Cincinnati, Ohio.

HANDLE & SPOKE MACHINERY

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Whitney & Son, Baxter D., Winchendon, Mass.

HARDWARE

Laidlaw Bale-Tie Co., Hamilton, Ont.
Webster, Knapp Co., Lonsdale, N.Y.

HARDWOOD LUMBER

Aberdeen Lumber Co., Pittsburg, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
American Oak Mfrs.' Assn., Memphis, Tenn.
American Walnut Association, Washington D.C.
Anderson-Tully Co., Memphis, Tenn.
Atlantic Lumber Company, Toronto, Ont.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bonner & Sons, J. H., Memphis, Tenn.
Brown & Company, Geo. C., Memphis, Tenn.
Burns & Knapp Lumber Co., Conneautville, Pa.
Bury & Company, Robert, Toronto, Ont.
Cornelius Lumber Co., St. Louis, Mo.
Canadian General Lumber Co., Toronto, Ont.
Churchill-Milton Lumber Co., Louisville, Ky.
Elgie & Jarvis Lumber Co., Toronto, Ont.
Evansville Band Mill Co., Evansville, Ind.
Hart & McDonagh, Toronto, Ont.
Heyser Lumber Co., W. E., Cincinnati, Ohio.
Holly Ridge Lumber Co., Louisville, Ky.
Kersley, Geo., Montreal, Que.
Korn-Conkling Co., Cincinnati, Ohio.
Long-Knight Mfg. Co., Indianapolis, Ind.
Maley & Wertz, Evansville, Ind.

McLennan Lumber Co., Montreal, Que.
Paepcke Leicht Lumber Co., Chicago, Ill.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City.
Petrie, H. W., Toronto, Ont.
Pickrel Walnut Co., St. Louis, Mo.
Probst Lumber Co., Cincinnati, Ohio.
Shafer Hardwood Co., John I., South Bend, Ind.
Spencer, C. A., Montreal, Que.
Webster, Knapp Co., Lonsdale, N.Y.

HUB MACHINERY

Fay & Egan Co., J. A., Cincinnati, Ohio.

HYDRAULIC VENEER PRESSES

Perrin & Company, Wm. R., Toronto, Ont.

JOINTERS

American Woodworking Machinery Company,
Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

LATHES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.

MACHINE KNIVES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

METALINE NAILS

Thompson Nail Co., Galt, Ont.

MITRE MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.

MITRE SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

MOULDERS

Vonnegut Machinery Co., Indianapolis, Ind.

MULTIPLE BORING MACHINES

Root Company, B. M., York, Pa.

MULTIPLE BOXING MACHINES

Fay & Egan Co., J. A., Cincinnati, Ohio.
Nash, J. M., Milwaukee, Wis.

OIL STONE GRINDERS

Mummert-Fixon Co., Hanover, Pa.

PANELS

Fay & Co., Limited, Woodstock, Ont.
Waetjen & Co., George L., Milwaukee, Wis.

PATTERN SHOP MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company,
Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

PLANERS

American Woodworking Machinery Company,
Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

PLANING MILL MACHINERY

American Woodworking Machinery Company,
Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PRESSES (Veneer)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Co., Wm. R., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.

PULLEYS

Bernard Industrial Co., A., Fortierville, Que.
Fay & Egan Co., J. A., Cincinnati, Ohio.

RESAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RIM AND FELLOE MACHINERY

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.

RIP SAWING MACHINES

American Woodworking Machinery Company,
Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company,
Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RUBBING MACHINES

DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.
Paasche Air Brush Co., Chicago, Ill.

SAFETY DEVICES

Cowan & Company, Galt, Ont.

SANDERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
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Preston, Ont.
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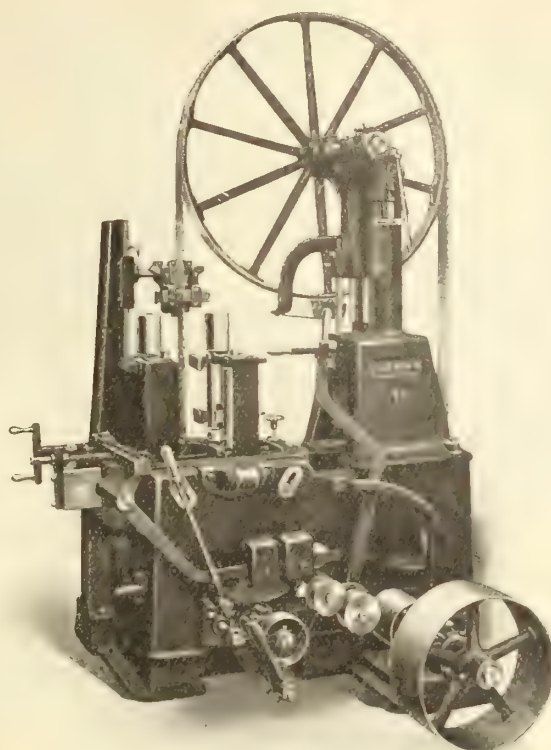
48" Wheels

Tilting Rolls

Capacity:

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Specifications
on request.*

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"Maple Leaf" Saws

We know we make good saws and try to make the best

We manufacture—

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all kinds of

Special Circular Saws
for Special work

Cross Cut Saws

Gang Saws

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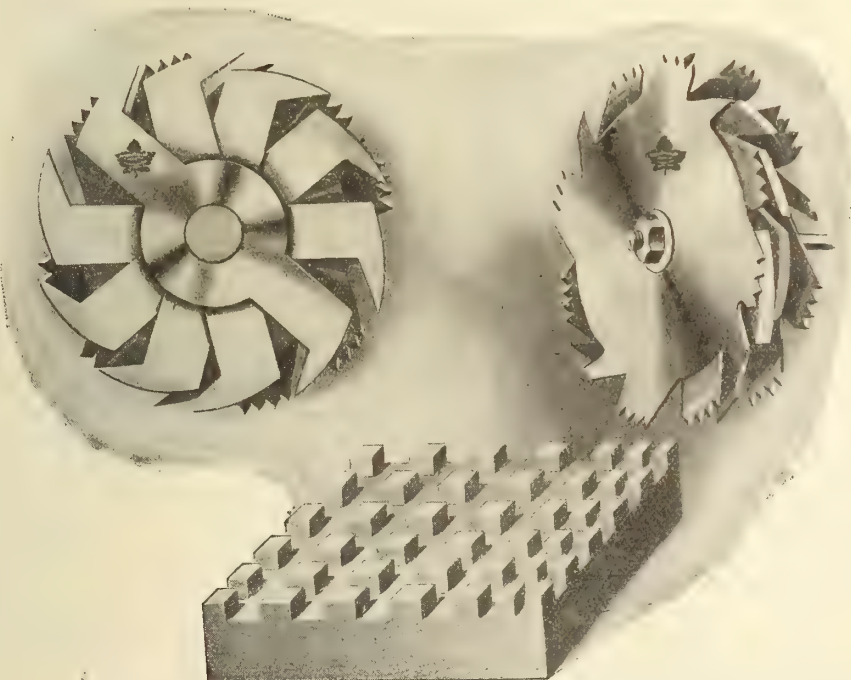
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Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAWS

Atkins & Co., E. C., Indianapolis, Ind.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Company, Toronto, Ont.
Shurly-Dietrich, Ltd., Galt, Ont.
Simonds Canada Saw Co., Montreal, Que.

SAW SWAGES

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.

SAW TABLES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SCRAPING MACHINES

Canada Machinery Corporation, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.

SCREW DRIVING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Reynolds Machine Co., Massillon, Ohio.

SCROLL SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SECOND-HAND MACHINERY

Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

SHAPERS

American Woodworking Machinery Company, Rochester, N.Y.
Cowan & Company, Galt, Ont.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

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Sheldons Limited, Galt, Ont.
Toronto Blower Company, Toronto, Ont.

SHOOK BUNDLER

Neilson & Company, J. L., Winnipeg, Man.

SPRING MATTRESS FRAMES

Newman Sons, J. P., Warton, Ont.

SPRINGS FOR UPHOLSTERY

Weber, Knapp Co., Jamestown, N.Y.

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Ault & Wiborg, Toronto, Ont.
Marietta Paint & Color Co., Marietta, Ohio.

SINGLE SPINDLE BOXING MACHINES

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Fay & Egan Co., J. A., Cincinnati, Ohio.

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Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

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Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES

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Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES

Walter & Company, B., Wabash, Ind.

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Canadian Powers Regulator Co., Toronto, Ont.

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Garlock-Walker Machinery Co., Toronto, Ont.
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Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

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International Business Machines Co., Toronto, Ont.

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American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

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Sheldons Limited, Galt, Ont.
National Dry Kiln Co., Indianapolis, Ind.

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Cowan & Company, Galt, Ont.
Dauber-Bell Machine Co., Oshkosh, Wis.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

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Garlock-Walker Machinery Co., Toronto, Ont.
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Bauers Limited, Waterloo, Ont.

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Ault & Wiborg Company, Toronto, Ont.
Jamestown Wood Finishing Co., Jamestown, N.Y.
Penfound Varnish Co., Toronto, Ont.

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DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

VENEERS

Bury & Company, Robert, Toronto, Ont.
Central Lumber Co., Indianapolis, Ind.
Dean Spicker Company, Chicago, Ill.
Empire Veneer Company, Chicago, Ill.
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Geo. Kersley, Montreal, Que.
Korn-Conkling Co., Memphis, Tenn.
Long-Knight Lumber Co., Indianapolis, Ind.
Nartzik, J. J., Chicago, Ill.
National Veneer & Lumber Co., Indianapolis, Ind.
North Vernon Lumber Co., North Vernon, Ind.
Ohio Veneer Company, Cincinnati, Ohio.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Roberts & Co., John N., New Albany, Ind.
Southern Veneer Mfg. Co., Louisville, Ky.
Thompson Veneer Co., W. T., Edinburgh, Ind.
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Perrin & Company, Wm. R., Toronto, Ont.

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Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Whitney & Son, Baxter D., Winchendon, Mass.
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Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg, Toronto, Ont.
Jamestown Wood Finishing Co., Jamestown, N.Y.
Penfound Varnish Co., Toronto, Ont.

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Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Mattison Machine Works, Rockford, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES

Fay & Egan Co., J. A., Cincinnati, Ohio.

WOODWORKING MACHINES

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Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Elliot Woodworker Limited, Toronto, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
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*If the Slide Does Not Work Properly
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SLIDE MAKING is a SPECIALTY BUSINESS

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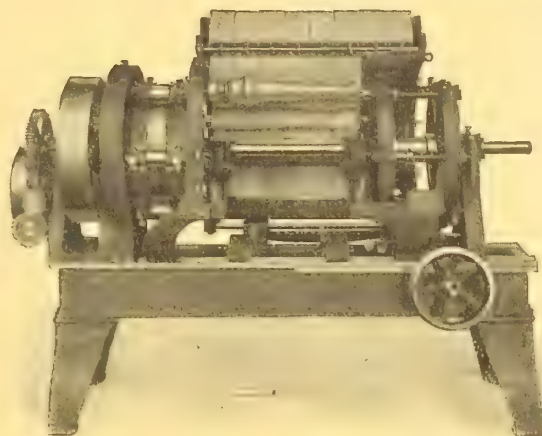
B. Walter & Company

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Canadian Representative:

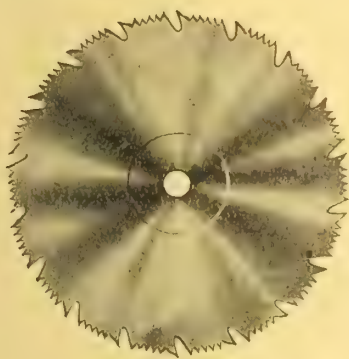
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Is It Wise



to continue sanding your chair and furniture turnings by hand when you can do it much better on the Nash Automatic Sander and at a big saving in cost? It will pay you to give this subject careful consideration.

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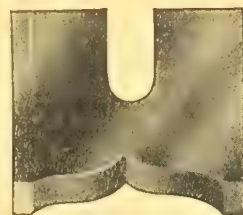
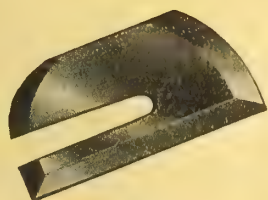
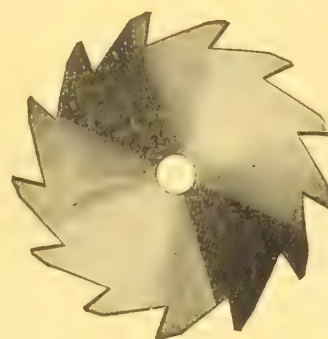
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Shape Your Cabriole Legs for Less Money

It's an expensive proposition to whittle out Cabriole Legs by hand methods; and it's difficult to get the true shape unless you use the Mattison Automatic Leg Forming Lathe.

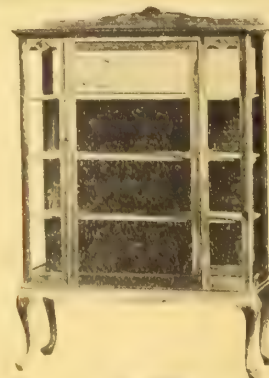
This machine can be operated by an unskilled workman. And while a leg is being turned, he can sand one; or he can keep two or three of the Forming Lathes busy, greatly increasing production with no extra outlay for labor.

Our patented cutterhead does not pound off the stock—it shears clean and smooth, leaving only a minimum amount of sanding to follow.

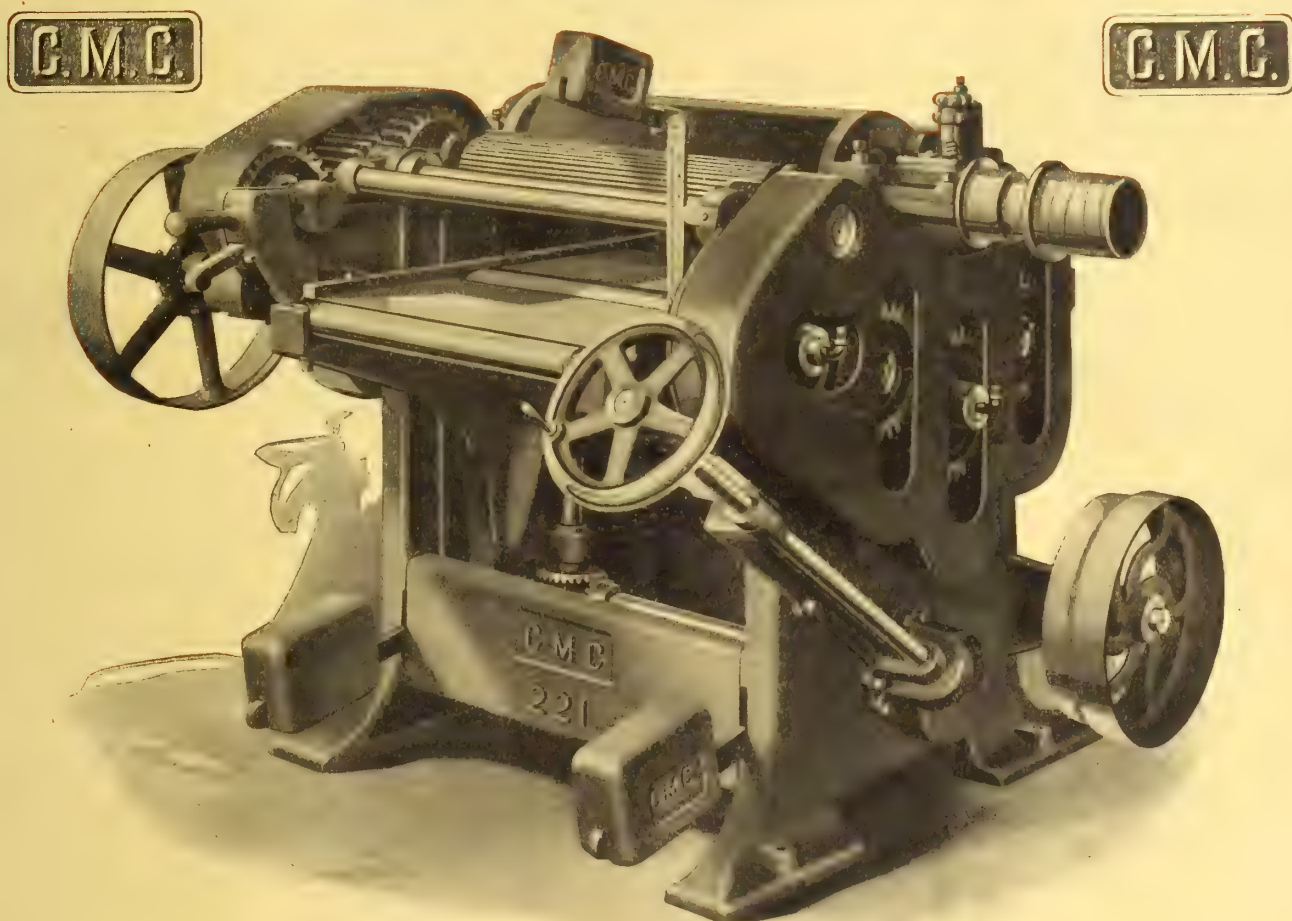
Ask us to show you what this machine can accomplish on your particular design of Cabriole Leg.

Bulletin "210" Explains Possibilities

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CANADIAN WOODWORKER *and* Furniture Manufacturer



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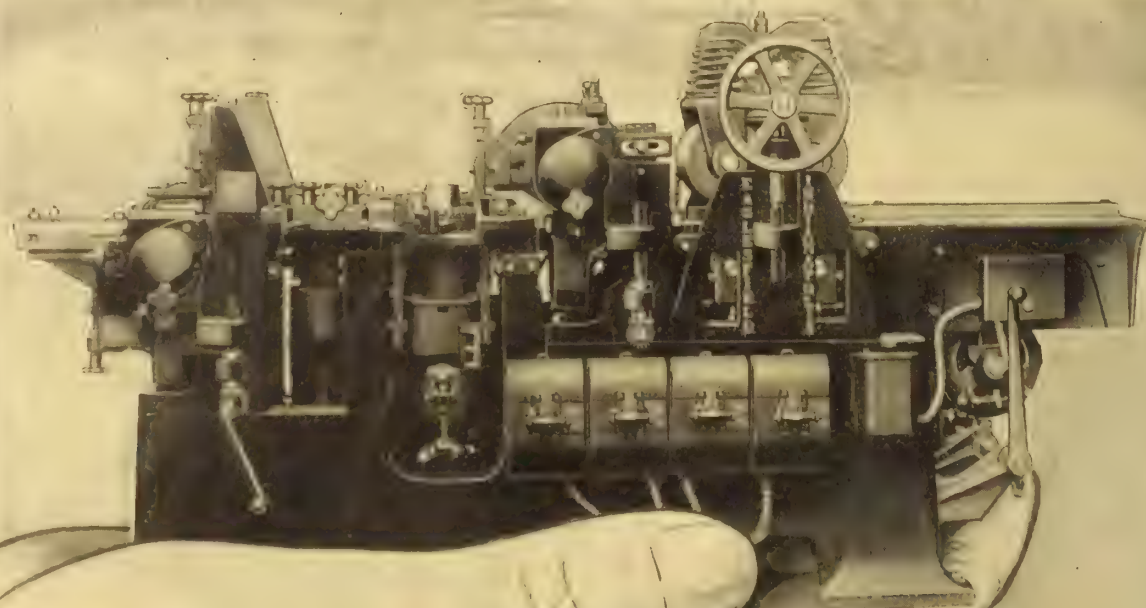
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The
PATENTED
EAGLEFIELD
MOULDER
COMPLETELY MOTOR DRIVEN



*Place it wherever
it is most convenient*

The four heads and the reversible feed works are five independent units—Separately controlled—And no more dependent on each other for power than if they were five different machines. Their functions are co-ordinated on a massive one-piece frame, but each works to its maximum capacity at standard speed without danger of being “pulled down” or “stalled” on account of the work being done by the other units. This is only one of the many reasons why this moulder does *more work, of better quality, and at less cost.*

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ROCHESTER, N. Y.

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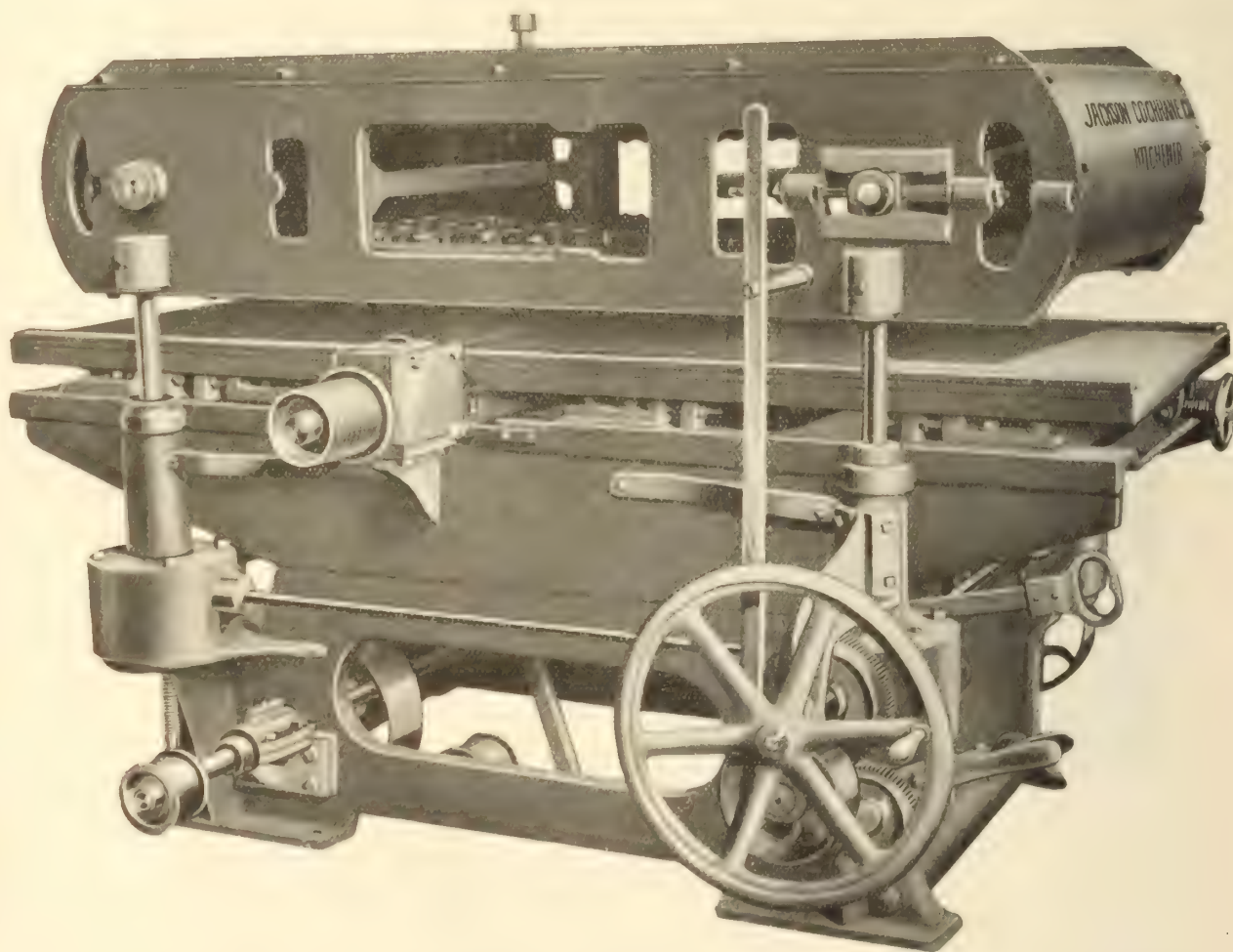
The Herzog Self-Feed Jointer

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Increased Production
Small Floor Space

Simplicity of Operation
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Does Four Times the Work of the Hand Jointer



Our No. 34 Herzog Jointer, illustrated above, is one of the most efficient machines on the market to-day. It is appreciated by the manufacturer and employees alike, because, while it will produce from three to five times as much work as the hand jointer, it does not require skilled operators, but eliminates the danger so common to other makes. It can be operated by two boys. It will handle stock varying in width from 1 inch to the full width of the jointer, will feed fast or slow, takes only one-fourth the floor space of hand jointers, and requires only one-fifth of the sharpening of the knives. It is fitted with power feed raising and lowering attachment, with cylinder double belted and driven from both ends.

If interested in reducing your costs, write us.

Jackson, Cochrane & Company
KITCHENER - CANADA



Yates type G-2
Edging & Ripping Saw
as installed
in the plant of
Thorpe Bros., New York City



It Takes the "Kick" Out of "Kickback"

THE famous Yates Type G-2 Edging and Ripping Saw is now supplied with a recently patented safety non-kickback device. It is the most simple and effective device of its kind ever put on a rip saw. It positively prevents splinters from being thrown back to the possible injury of the operator. This is one of the many exclusive features on the Yates Type G-2 which merit your careful consideration before purchasing a rip saw.

We have prepared a new eight-page illustrated circular on this machine, which is free for the asking. Request one today.

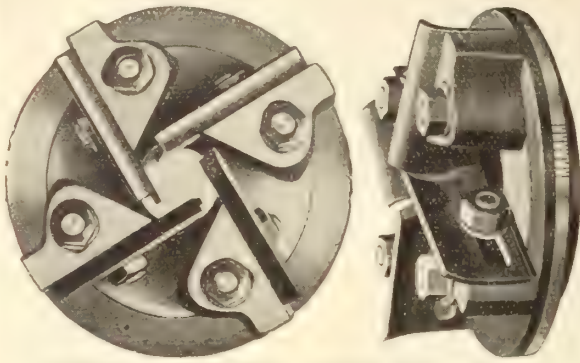


P. B. Yates Machine Co. Ltd.

HAMILTON, ONT. CANADA

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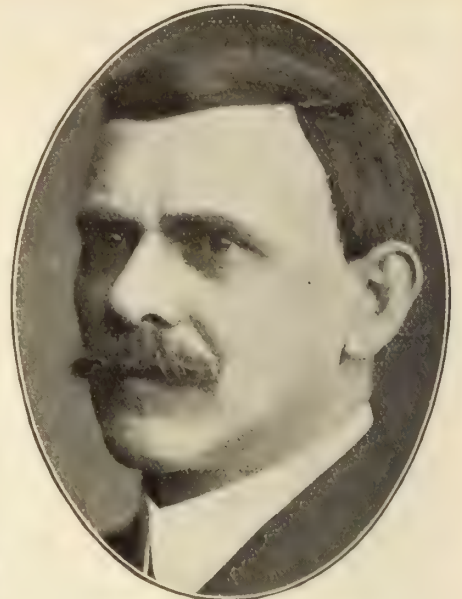
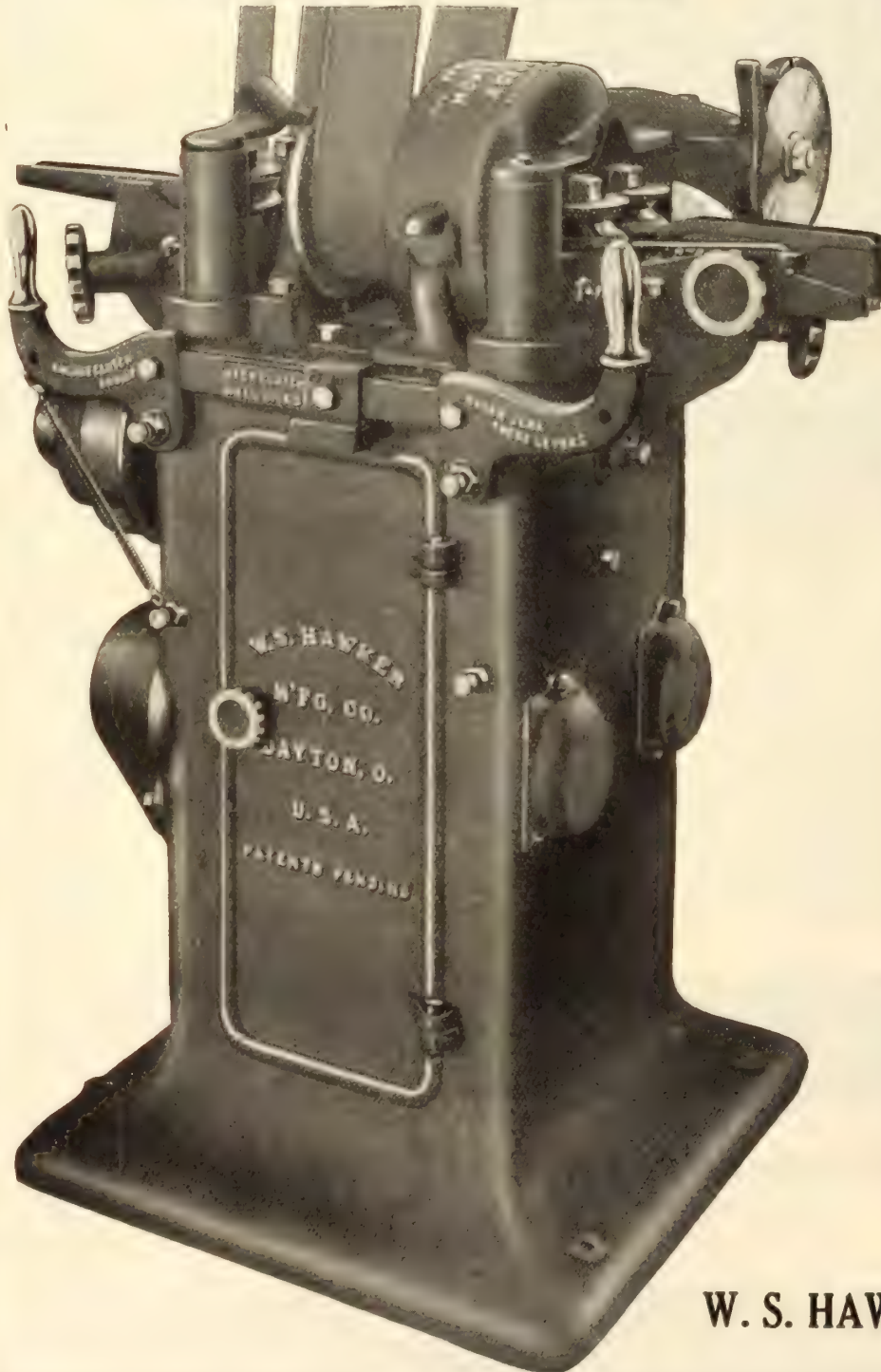


UNIVERSAL ADJUSTABLE CUTTER HEAD Patented.
Infringements (maker or user) will be vigorously prosecuted.

Two Heads

that have put
100% more profit
in the production
of Dowel Stock.

FOR SHIP TREENAILS



W. S. HAWKER.

Inventor and Designer of the World's most
efficient Tubular Turning Machinery

THE

Money Maker Adjustable Rod and Dowel Machine

The machine that is sent under a guarantee
to show you a gain of from 100 to 400 per cent.
before you buy it.

The improved dowel machine that 90 per
cent. of the largest and oldest machinery build-
ers and dealers now endorse and recommend in
preference to the solid chuck machines they
themselves previously built.

One cutter head turns from 1/4 in. to 2 in.
diameter.

Turns hard or soft wood equally well.
Handles heavy, oversized squares.
No choking of the cutter head.
Smooth stock.
Accurate sizes.
Works stock as short as five inches.
Rolls automatically centre variations in
squares.

Machines built to turn from 1/8 to 6 in.
We want to hear from every user of a solid
chuck dowel machine.

We can save you from one dollar out of
every two, to four out of every five, that the
operation of solid chuck machines costs you.

Engagements for competitive test solicited.
Formal orders not solicited. All sales made
after demonstration.

The only question is, are you willing to cut
cost of your dowel turning to one-half or one-
third of what it costs with any make of solid
chuck machine?

Machine delivers the goods before you buy.
State conditions of stock closely.
Special conditions require special equipment.

W. S. HAWKER MFG. COMPANY
DAYTON, OHIO.

The "Shimer Limited" Expansion Head

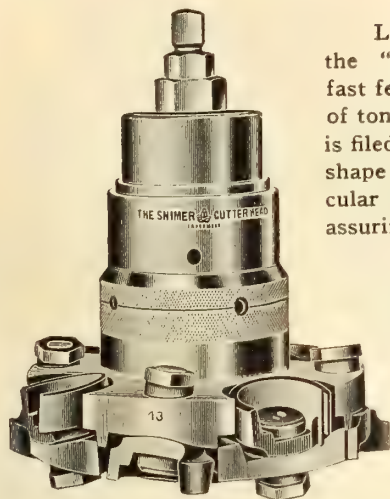


Fig. 627

Let us draw your attention to the advantages of using the "SHIMER CUTTER HEAD" for general Mill and fast feed Planer work. The Cutter is turned to cut the shape of tongue and groove desired, so that to sharpen the cutter it is filed or ground on its face, guaranteeing the user the same shape of cut during the life of the cutter. The bit being circular has from $3\frac{1}{2}$ in. to 5 in. cutting length to the cutter, assuring long wearing life to the cutters.

Note that the cutter, being fastened to a concave seat on a compound angle, assures the user of the proper clearance of cutters, consequently they never burn.

These heads are fitted with or without the Self-Centering Sleeve, and made Expansion or Solid, to suit the customer's wishes.

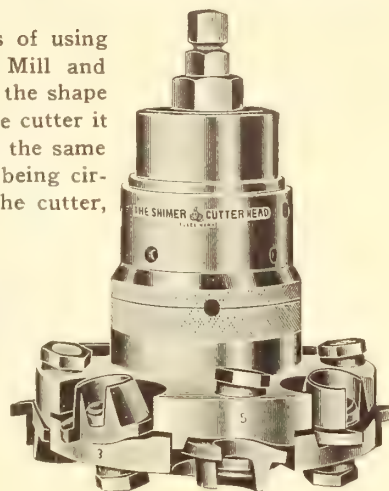


Fig. 268

Shimer Heads have been in use for sixty years, and their reliability and reputation have spoken for them in the past. Let us know your wants and we will guarantee their reliability at the present.

SHIMER CUTTER HEAD CO. OF CANADA, LIMITED

Successors to Samuel J. Shimer & Sons, Inc.

GALT, ONTARIO

Special "Beaver" Dado

Our "Beaver" Dado head is composed of two special bevel wing grover saws $\frac{1}{8}$ in. thick on outsides. The inside cutters being made with several teeth on each end and swaged for clearance will not chop or "break out." They are $\frac{1}{8}$ in. thick.



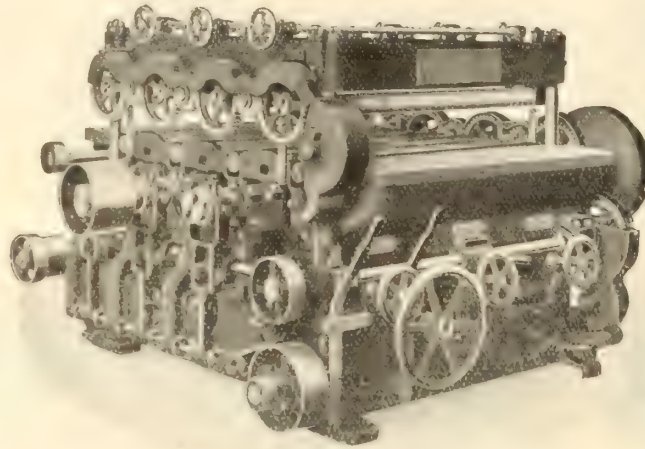
Specially designed to cut with or across the grain, leaving a smooth, clean surface. Indispensable in the manufacture of furniture and boxes.

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3 and 2 Drum
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Endless Bed
Belt—all kinds

Single Drum
Drum and Disc
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Double Spindle
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Flexible Arm
etc.

*The Fay-Egan "Lightning" line
is the most complete made.*

Put your sanding problems up to us—our line of sanders is complete—we can and will recommend the type best suited to your individual needs.

Every Fay-Egan Sander is a unit of highest efficiency, developed from a thoroughly practical design, by skilled mechanics with unlimited manufacturing facilities and highest grade materials.

Machine sanding is one of the greatest economizers in modern woodworking—are you getting the benefit?

*Write for Bulletins covering any
or all kinds of Sanders.*

J. A. Fay & Egan Co.

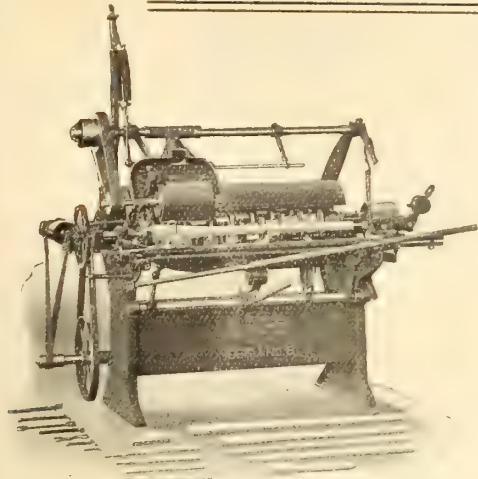
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*World's Oldest and Largest Manufacturers of Woodworking
Machinery.*

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Cincinnati, Ohio



42" Patent Automatic Spoke and Handle Lathe

Defiance High Productive Spoke^{and} Handle Machines

UNEQUALLED IN TURNING A LARGE VARIETY OF SPOKES AND HANDLES

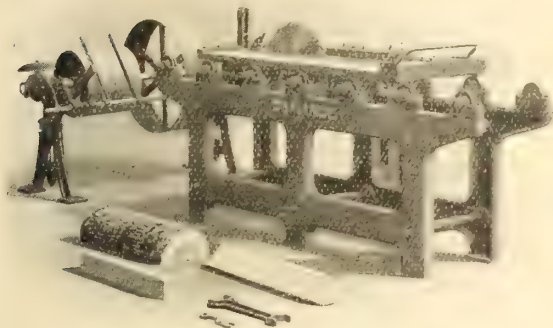
The possibilities of the oscillating table, together with a wide range of adjustments of cutter heads and knives, makes Defiance Automatic Spoke and Handle Lathes unequalled in turning a large variety of shapes. Simplicity in design and Mechanism practically eliminates breakdowns and upkeep cost. Big output in accurate and uniform shapes insures a profitable production.

These machines are made in various sizes, ranging from 18-inch to 58-inch in length. They turn spokes of all kinds for Army Escort Wagon and Artillery Wheels, Farm Wagon and Carriage Wheels, Automobile, Motor Truck, Baby Carriage and Toy Wagon Wheels, etc. They turn handles for small tools, brushes, hammers, hatchets, picks, mauls, etc. Write for illustrated and descriptive circular.

The Defiance Machine Works
DEFIANCE, OHIO, U. S. A.

New York

London



No. 1 Spoke and Handle Blank Saw

You Have Paid for an Installation of **Chapman Double Ball Bearings**

in Your Factory over and over again, BUT—

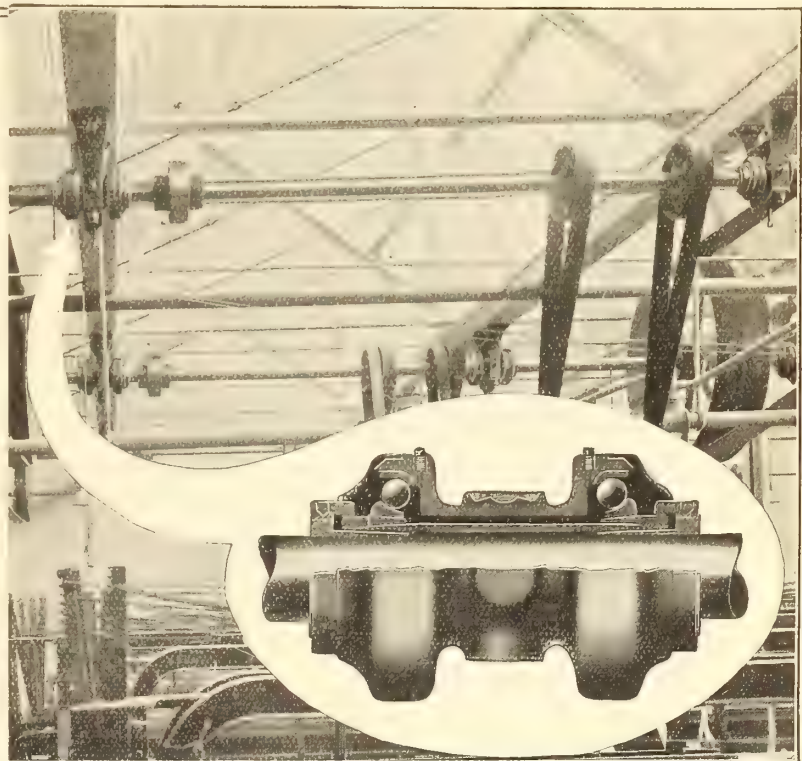
HAVE YOU GOT THEM?

Ordinary line shafting wastes 15 per cent. to 60 per cent. of power.

Line shafting equipped with Chapman Double Ball Bearings will eliminate about 75 per cent. of the friction, thus averaging a total saving of from 15 per cent. to 30 per cent.

Chapman Double Ball Bearings fit any adjustable hanger and require oiling and attention only once a year. No extra equipment required to install.

Write to-day for full particulars



The Chapman Double Ball Bearing Co. of Canada, Limited
Toronto 339-351 Sorauren Ave. **Ontario**

American Branch: The Transmission Ball Bearing Co., Inc., 32 Wells St., Buffalo, N.Y.

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A Few New and Refitted Woodworking Machines

from our large stock of up-to-date machinery. Write us for prices and information on any machines not listed that you may require.

CHAIN MORTISERS

- Stock No. 44911—Used M-256 Cowan Chain Mortiser with 5/16 in. bar chain and sprocket. No sharpener.
- Stock No. 44566—Practically new M-255 Cowan Chain Mortiser with 5/16 in. chain, bar and sprocket with 1 3/4 in. sprocket extra.
- Stock No. 44568—Practically new M-255 Cowan Chain Mortiser with 3/8 in. chain bar and sprocket and 5/16 in. chain bar and sprocket.
- Stock No. 44567—Practically new M-255 Cowan Chain Mortiser with 3/8 in. chain bar and sprocket and 5/16 in. chain bar and sprocket.

SINGLE SURFACE PLANERS

- Stock No. 32959—New 24 x 7 Eclipse Single Surface Planer, top and bottom rolls driven. Feed rolls are 3 1/2 in. diameter, 13 1/2 in. apart.
- Stock No. 31317—New Preston 26 x 10 Single Surface Planer with divided rolls. Feed rolls are 16 in. apart.
- Stock No. 31318—As above.
- Stock No. 44620—Used 24 x 7 Eclipse Planer, Matcher and Moulder, will match 12 in. wide.
- Stock No.—Used 24 x 7 Eclipse Single Surface Planer.
- Stock No. 33111—New 24 x 7 Clark & Demill Single Surface Planer, cylinder driven at both ends. Feed rolls 4 1/2 in. dia., 19 in. apart, all driven.
- Stock No. 29278—Used 30 x 8 McGregor-

Gourlay Single Surface Planer, with divided rolls and chip breaker. Cylinder is driven at both ends. Feed rolls 6 in. dia., 17 in. apart. This is a good heavy type cabinet planer.

Stock No. 31758—Used 24 x 6 Whitney Single Surface Planer, cylinder driven at both ends. Feed rolls 4 1/2 in. dia., 12 1/2 in. apart, all driven.

Stock No. 44913—Used 28 x 6 Whitney type Single Surface Planer, cylinder driven at both ends. Rolls 4 3/4 in. dia., 13 in. apart, all driven.

Stock No. 44846—Second-hand McGregor-Gourlay 24 x 7 Pony Planer, top rolls only are driven. Rolls are 3 in. dia., 13 in. apart. Machine is now manufactured by the C. M. C. Bottom rolls 5 in. dia., and machine will feed 25 ft. per minute. Tight and loose pulleys are 8 1/2 in. x 4 1/2 in., run 1000 r.p.m.

CUT OFF SAWS

Stock No. 42306—Used Greider Automatic Cut-Off Saw, travelling saw carriage operated by foot lever and friction, 36 in. dia. saw, cuts 13 1/2 in. above table.

Stock No. 44798—Used McGregor-Gourlay Dimension Rip and Cross Cut Saw Table. Will carry 18 in. saws, ripping 13 in. wide, with rip and cross cut fences, raising and lowering arbor, tilting table 48 in. x 36 in.

Stock No. 42782—New Beach Iron Frame Rip Saw with wooden table, raising and lowering mandrel.

Stock No. 42795-41—New No. 125 Preston Variety Tilting Saw Table.

Stock No. 44733—New No. 127 Preston Variety Tilting Saw Table.

Stock No. 42826—New No. 4 Dodds Variety Tilting Saw Table.

Stock No. 42784—New No. 6 Dodds Variety Tilting Saw Table.

Stock No. 44685—American Lightning Cut off Saw. Machine is self contained. Size of table 26 x 31 1/2 in.

SASH AND DOOR RELISHERS

Stock No. 44529—M-225 Cowan Sash & Door Relisher and Mortiser.

Stock No. 40964—Jackson Cochrane Door Relisher.

Stock No. 40968—M-234 Cowan Sash Relisher and Mortiser.

BAND SAWS

Stock No. 44627—Used Genuine Westside 36 in. Band Saw, with tilting table, good up-to-date machine; first class condition.

Stock No. 45590—New 36 in. Preston Band Saw with wire guard on top wheel, iron enclosing doors on bottom wheel.

Stock No. 44653—Used 36 in. Preston Band Saw with wire guard on top wheel and iron enclosing doors on bottom wheel arranged for motor drive.

Stock No. 44913—Used 36 in. Defiance Band Saw with re-sawing attachment, will carry 1 1/2 in. saw.

The A. R. Williams Machinery Co., Limited
TORONTO, CANADA

"Treat your machine
as a living friend"

SAVE

In Your Veneer Room

50% of Your Present Labor Cost

Four Men to do the Work of Eight!

Keen competition is ahead of you.

To compete **successfully** your equipment should include :

A "Black Bros." Veneer Taping Machine

Let us place one with you on trial and prove—*That it will cut your Labor Cost in two.*

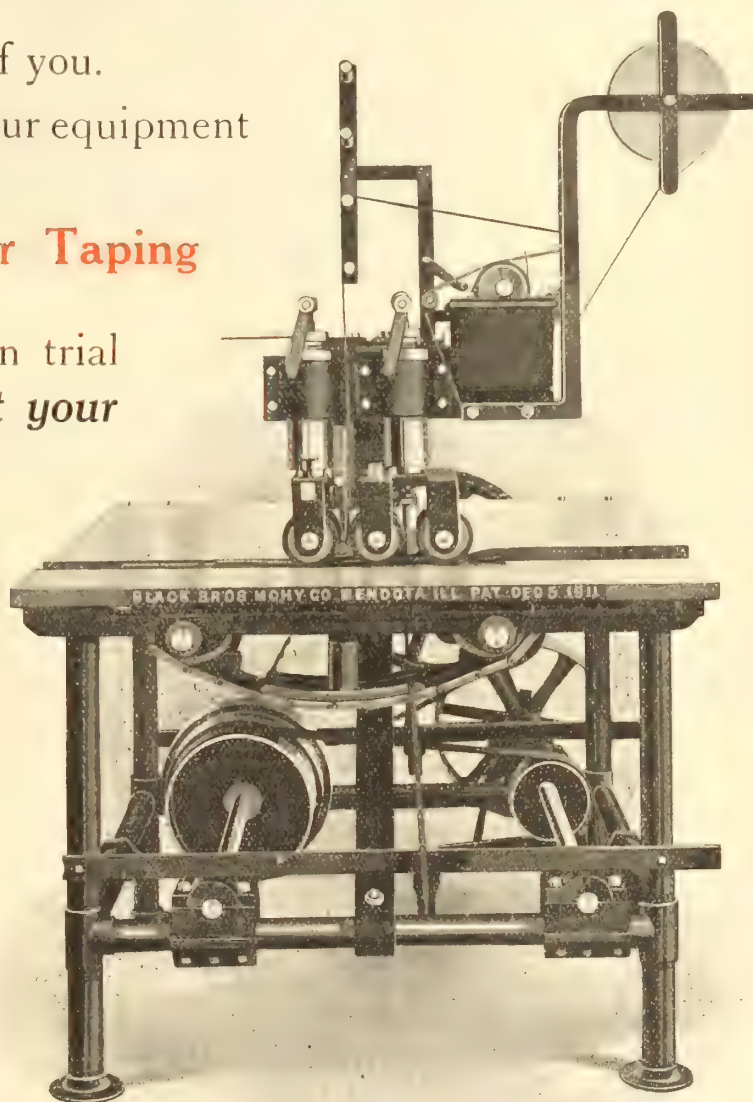
This machine will tape together all kinds of Veneer, no matter whether it be thick or thin, handling both kinds equally well.

It will use the ordinary gum tape, or it will use plain paper tape and put on its own gum or glue just before it is laid.

Built in two sizes—24 in. and 36 in.

**Ask for prices and
particulars**

WE CONTROL THE CANADIAN PATENT
ON THIS MACHINE.



"Black Bros." Patented Veneer Taping Machine

The Preston Woodworking Machinery Co.

Preston, Ontario, Canada Limited

Red Gum Sap Gum Oak Tupelo

We carry a well assorted stock ready for immediate shipment of all Southern Hardwoods. Make a specialty of loading mixed cars of various grades and thicknesses for the factory trade. We issue a monthly stock sheet showing at a glance delivered prices on everything we have ready for shipment. If you are not receiving these lists, please write us.

P. J. Lawrence Lumber Co.

Sales Office

Syndicate Trust Bldg. St. Louis, Mo., U.S.A.

J. V. Stimson & Co.

Manufacturers and Wholesalers Band Sawn

Hardwood Lumber and Dimension Stock

Band Mills and Yards

OWENSBORO, KY.

Permit us to figure on your needs in Plain and Quartered Red and White Oak, Ash, Poplar and Walnut.

Our "Specialty" is Quality

When Dry Lumber Gets Scarce

Remember !

Our dry-kiln is at your service—500,000 feet per month capacity and 10,000,000 feet of lumber from our own band-mills to draw upon.

James E. Stark & Co., Inc.
MEMPHIS, TENN.

Bone Dry

Right now dry lumber is scarce. Here's a list of dry stock ready for prompt shipment. Remember there's 30 years' experience back of every board.

- 1 car 5/8 FAS Plain Red Oak.
- 1 car 5/8 No. 1 Com. Plain Red Oak.
- 10 cars 4/4 No. 2 Com. and Btr. Plain Red Oak.
- 1 car 5/4 FAS Plain Red Oak.
- 1 car 5/4 No. 1 Com. Plain Red Oak.
- 2 cars 6/4 FAS Plain Red Oak.
- 2 cars 6/4 No. 1 Com. Plain Red Oak.
- 1 car 8/4 FAS Plain Red Oak.
- 1 car 8/4 No. 1 Com. Plain Red Oak.
- 3 cars 10/4 FAS Plain Red Oak.
- 1 car 10/4 No. 1 Com. Plain Red Oak.

Write for our complete list with prices.

*Write for our Complete List
with Prices*

North Vernon Lumber Co.
NORTH VERNON, IND.

LOUISVILLE, KY. DYERSBURG, TENN.

Every Board Branded "NVLCO." Quality Guaranteed

FURNITURE CARVINGS

We have
issued
a complete

**NEW
CATALOG OF
FURNITURE
CARVINGS.**

*Will send on
request.*

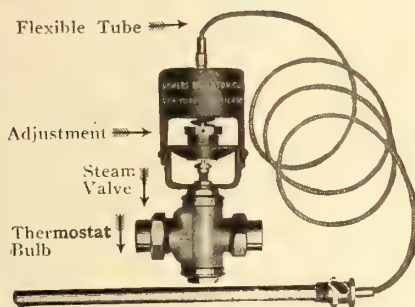


Our Carvings
are being used
by most of the
High-Class
Furniture
Manufacturers.

Exclusive orna-
ments—accord-
ing to customers'
design—our
specialty.

DECORATORS SUPPLY CO. Archer Ave. and Lime St., Chicago, Ill.

The Dollar and the Glue Kettle



The Powers No. 11 Regulator

This Regulator is entirely self-contained, requiring no air or water pressure for operation. Automatic, reliable, and accurate. Peculiarly adapted to the control of liquid temperatures. There is a Powers Regulator for practically every place where temperature control is desirable. Tell us your conditions, and we will advise you how to get right results—saving time, labor, material, and coal, and improving the grade of output.

Do you realize that your good money is knocked off the paddle of every glue kettle in your plant—knocked off onto the floor and no attention paid to it?

Glue costs money. Whenever a glue kettle gets too cool, a quantity of that money is thrown away, because the glue thickens up on the paddle, and must be knocked off.

Automatic Regulation of the heat applied to the glue would positively prevent its becoming too thick or too thin—another prolific cause for waste of glue, as well as other losses.

This point is well worth your study, in these days when every possible penny must be saved to help pay high wages.

We'll send you our Bulletin 138, if you'll say the word. It tells all about our No. 11 Regulator, which is saving money in a good many woodworking shops, and will save money for you, if you'll let it.

Drop us a line, NOW. We'll send it, free.

The CANADIAN POWERS REGULATOR Co., Ltd.

Specialists in Automatic Heat Control

115 BAY STREET - TORONTO, ONT.

An Introduction to Canadian Lumber Buyers

This is the first chapter of a series of short stories telling you something of our business, our methods, our policies and our ambitions.

First let us introduce ourselves. We are manufacturers of Southern Hardwoods. We have spent a lifetime at this business and nothing would please us better than to have you investigate our record. We market only the products of our own mills. We operate two band-mills in the Yazoo Valley District of Mississippi. Our specialty is Red and Sap Gum. We manufacture about 20 million feet a year of Southern Hardwoods, including over 12 million of gum, and usually carry in stock 10 millions or more. Later we will tell you more about our mills, our splendid Yazoo Valley Gum, our grades and the general quality of our stock. After all, possibly the best evidence of our ability to serve you well is a sample shipment of our lumber.

Red Gum, both plain and quartered, we believe to be the best purchase in the hardwood market to-day. Consider carefully the following list and write or wire us your inquiries:

PLAIN RED GUM.

- 1 car 4/4 1st & 2nd.
- 1 " 4/4 No. 1 Com. & Sel.
- 1 " 5/4 1st & 2nd.
- 5 " 5/4 No. 1 Com. & Sel.
- 1 " 6/4 1st & 2nd.
- 3 " 6/4 No. 1 Com. & Sel.
- 1 " 8/4 No. 1 Com. & Sel.

QTD. RED GUM.

- 5 cars 4/4 No. 1 Com. & Sel.
- 5 " 5/4 No. 1 Com. & Sel.
- 3 " 6/4 No. 1 Com. & Sel.
- 2 " 8/4 No. 1 Com. & Sel.
- 1 " 10/4 No. 1 Com. & Better.
- 1/2 " 12/4 1st & 2nd.



BELLGRADE LUMBER CO.
MEMPHIS, TENN.

RED GUM

("AMERICA'S FINEST CABINET WOOD")

Before RED GUM became recognized as a cabinet wood which manufacturers are proud to use and to tell about, and which *consumers* are proud to own, a good many high-class furniture manufacturers were obliged to call RED GUM by some sort of pretty nickname.

NOW ALL THAT IS CHANGED

The RED GUM producers have spent (and are still spending) thousands of dollars to tell the public that RED GUM is not only "America's most winsome wood," and *a thoroughly reliable wood* when properly manufactured, but also that to have a suite of "Genuine American RED GUM" in one's home is a *fact to boast of*.

As the public is being continuously educated to CALL FOR RED GUM BY NAME, isn't it good policy for all furniture manufacturers who make RED GUM furniture to call it by its RIGHT NAME and nothing else? Isn't it GOOD BUSINESS to do so? If they *don't*, what will they say when the public ASKS for "REAL RED GUM?" Are we right?

Write us for samples, particulars and general information.
Our reply will be prompt, personal and dependable.

GUM LUMBER MANUFACTURERS' ASS'N
1314 Bank of Commerce Building, Memphis, Tennessee



An Announcement—

To the Canadian Woodworking and Furniture Trade we wish to extend greetings and wishes for the creation of a greater and brisker after-war business.

We desire to establish with the Canadian Trade greater dealings. We can meet your requirements with the best procurable in lumber, etc. Quality, Service and Satisfaction are but three of the points which will merit your order.

Why not send us a list of your requirements today? We will give same our immediate attention.

If you are not receiving our MONTHLY MAILING SERVICE, giving you an idea of stocks on hand, a post card request from you will bring it to your office regularly. It is something different,—let us send it to you.

MEMPHIS BAND MILL CO.

MEMPHIS, TENN., U.S.A.

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for Quick Shipment

BASSWOOD			
	1 & 2	No. 1	No. 2
	Clear Strips	Com.	Com.
1 in.	52,700	2,200	135,000
1 1/4 in.	201,300	12,000	106,500
1 1/2 in.	33,600	.....	14,800
2 in.	16,200	.....	40,000
2 1/2 in.	75,000	.....	25,900
3 in.	.....	.....	13,000
			3,900

BUTTERNUT			
	1 & 2	No. 1	No. 2
	Clear Strips	Com.	Com.
1 in.	13,300	35,800	15,600
2 1/2 in.	3,700	4,500	.....

TENNESSEE SCENTED RED CEDAR			
	1 & 2	No. 1	No. 2
	Clear Strips	Com.	Com.
1 in.	8,100	4,800	.....
1 1/4 in.	4,900	.....	.....

HICKORY			
	1 & 2	No. 1	No. 2
	Clear Strips	Com.	Com.
1 in.	1,200	1,300	.....
1 1/4 in.	400	.....
1 1/2 in.	5,300	.....
2 in.	10,000	600
2 1/2 in.	10,000	5,000
3 in.	1,250	5,580
4 in.	100	.....

PLAIN RED OAK			
	1 & 2	No. 1	No. 2
	Clear Strips	Com.	Com.
3/4 in.	30,200	.....	.....
1 in.	210,000	.....	3,400
1 1/4 in.	18,500	.....	7,100
1 1/2 in.	256,200	2,700	68,900
2 in.	41,700	2,400	34,000
2 1/2 in.	68,900	4,300	46,200
3 in.	24,100	.....	38,800
3 1/2 in.	18,100	.....	.....
4 in.	19,800	.....	5,500
	6,600	.....	4,900

QUARTERED RED OAK			
	1 & 2	No. 1	No. 2
	Clear Strips	Com.	Com.
1 in.	72,200	41,300	38,800
1 1/4 in.	500	.....	3,900
1 1/2 in.	1,000	.....	7,400

CHERRY			
	1 & 2	No. 1	No. 2
	Clear Strips	Com.	Com.
1 in.	154,000	24,000	107,200
1 1/4 in.	.....	600	.....
1 1/2 in.	22,000	.....	16,700
2 in.	8,100	.....	18,200
3 in.	1,700	.....	1,500
4 in.	.....	800	1,600

CHESTNUT			
	1 & 2	No. 1	No. 2
	Clear Strips	Com.	Com.
1 in.	229,900	7,700	13,300
1 1/4 in.	88,800	1,300	31,200
1 1/2 in.	22,500	.....	1,000
2 in.	18,200	.....	55,300

RED GUM			
	1 & 2	No. 1	No. 2
	Clear Strips	Com.	Com.
1 in.	74,300	13,200	.....
1 1/4 in.	24,200	11,200	.....
1 1/2 in.	11,000	11,300	.....
2 in.	30,100	4,800	.....

SAP GUM			
	1 & 2	No. 1	No. 2
	Clear Strips	Com.	Com.
1 in.	47,400	8,000	.....
2 in.	11,730	.....	.....
2 1/2 in.	13,000 qtd.	5,500 qtd.	.....

PLAIN WHITE OAK			
	1 & 2	No. 1	No. 2
	Clear Strips	Com.	Com.
3/4 in.	23,400	.....	11,900
1 in.	11,300	.....	800
1 1/4 in.	11,150	.....	.....
1 1/2 in.	31,900	.....	5,000
2 in.	188,300	1,800	33,800

QUARTERED WHITE OAK			
	1 & 2	No. 1	No. 2
	Clear Strips	Com.	Com.
1 in.	72,500	25,400	118,600
1 1/4 in.	.....	.....	.....
1 1/2 in.	67,400	7,800	26,000
2 in.	1,500	.....	1,900
2 1/2 in.	1,500	.....	.....
3 in.	8,500	1,350	7,100

POPLAR			
	1 & 2	No. 1	No. 2
	Clear Strips	Com.	Com.
1 in.	2,500	19,600	.....
1 1/4 in.	18,200	50,000	16,600
1 1/2 in.	2,800	2,700	15,000
2 in.	4,300	2,600	8,000
2 1/2 in.	18,600	.....	15,000
3 in.	20,800	.....	24,000
4 in.	5,900	.....	32,600

BOX BOARDS			
	1 & 2	No. 1	No. 2
	Clear Strips	Com.	Com.
1 in.	2,500	19,600	.....
1 1/4 in.	18,200	50,000	16,600
1 1/2 in.	2,800	2,700	15,000
2 in.	4,300	2,600	8,000
2 1/2 in.	18,600	.....	15,000
3 in.	20,800	.....	24,000
4 in.	5,900	.....	32,600

BLACK WALNUT			
	1 & 2	No. 1	No. 2
	Clear Strips	Com.	Com.
1 in.	37,600	104,900	59,300
1 1/4 in.	10,600	17,600	6,000
1 1/2 in.	7,700	60,000	20,700
2 in.	5,000	153,500	35,500
2 1/2 in.	.....	35,300	.....
3 in.	49,000	32,000	.....
4 in.	5,000	.....	.....

BRIGHT SAPS			
	1 & 2	No. 1	No. 2
	Clear Strips	Com.	Com.
1 in.	2,500	19,600	.....
1 1/4 in.	18,200	50,000	16,600
1 1/2 in.	2,800	2,700	15,000
2 in.	4,300	2,600	8,000
2 1/2 in.	18,600	.....	15,000
3 in.	20,800	.....	24,000
4 in.	5,900	.....	32,600

Also Large Stock of ASH, BEECH, BIRCH and MAPLE

THE ATLANTIC LUMBER CO., Inc., 310 Manning Chambers, Toronto
MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Head Office : BOSTON, MASS.

Yards : BUFFALO, N.Y.

MILLS : KNOXVILLE, TENN. : FONDE, KENTUCKY

SAP AND RED GUM

ALL KINDS OF Southern Hardwoods CRATING

"We specialize in furnishing Factory Stock, including all grades and thicknesses of Cypress, Sap, Red, Tupelo and Black Gum, Cottonwood, Oak, Elm, Sycamore and Ash. Permit us to take care of your order".

Write us
QUALITY AND SERVICE OUR MOTTO

Cornelius Lumber Company
ST. LOUIS, Mo., U. S. A.

"Gum of Quality" Yazoo River Red Gum

as produced by

Thomas & Proetz Lumber Company

No. 3400 Hall St. St. Louis, Mo.

is carefully manufactured; soft in texture; dark, rich in color; and admirably suited for furniture and interior trim.

Mills—Belzoni, Miss.; Catchings, Miss.
Naples, La.

If you are not buying from us, write today.

List of Dry Stock on Hand Ready for Immediate Shipment

GUM

61,211 ft. 1 x 13-17" Sap Gum Box.
52,041 ft. 1 x 9-12" Sap Gum Box.
61,207 ft. 1" 1st and 2nds Red.
472,426 ft. 1" No. 1 Com. and Selects Red.
90,500 ft. 6/4 1st and 2nds Red.
6,170 ft. 8/4 1sts and 2nds Red.
32,866 ft. 5/4 1st and 2nds Red.
106,496 ft. 5/4 No. 1 Com. and Selects Red.
10,672 ft. 6/4 1sts and 2nds Quartered Red.
4,916 ft. 8/4 1st and 2nds Quartered Red.
22,610 ft. 4/4 No. 1 Com. and Selects Qtd. Red.
2,250 ft. 6/4 No. 1 Com. and Selects Qtd. Red.
4,130 ft. 1" 1st and 2nds Qtd. Red.
197,246 ft. 1st and 2nds Sap.
579,243 ft. 1" No. 1 Com. and Selects Sap.
337,947 ft. 1" No. 2 Com. and Selects Sap.
112,142 ft. 1" No. 3 Com. and Selects Sap.
22,159 ft. 5/4 1st and 2nds Sap.
261,242 ft. 5/4 No. 1 Com. and Selects Sap.
149,049 ft. 5/4 No. 2 Com. and Selects Sap.
145,246 ft. 6/4 No. 1 Com. and Selects Sap.
173,047 ft. 6/4 No. 2 Com. and Selects Sap.
14,219 ft. 6/4 No. 3 Com. and Selects Sap.

YELLOW CYPRESS

30,302 ft. 4/4 1st and 2nds.
33,313 ft. 4/4 Selects, 8, 10 and 12 ft.
15,594 ft. 4/4 Shop.
25,594 ft. 4/4 Shop, 8, 10 and 12 ft.
31,165 ft. 4/4 No. 1 Common, 8, 10 and 12 ft.
23,915 ft. 4/4 No. 2 Common.
137,216 ft. 5/4 Shop.
51,492 ft. 5/4 No. 1 Common.
33,246 ft. 5/4 No. 2 Common.
8,390 ft. 6/4 No. 1 Common.
6,601 ft. 6/4 No. 2 Common.
21,078 ft. 8/4 1sts and 2nds.
17,880 ft. 8/4 Select.
12,147 ft. 8/4 Shop.
49,478 ft. 8/4 No. 1 Com.
37,493 ft. 8/4 No. 2 Com.

YELLOW CYPRESS (Cont'd).

11,200 ft. 10/4 1st and 2nds.
12,391 ft. 10/4 Select.
11,019 ft. 10/4
5,012 ft. 10/4 No. 1 Com.
1,516 ft. 10/4 No. 2 Com.
10,785 ft. 12/4 1sts and 2nds.
9,998 ft. 12/4 Selects.

COTTONWOOD

8,100 ft. 5/8 No. 1 Com.
3,500 ft. 1 x 18 and up Panel.
40,425 ft. 1 x 9/12" Box Boards.
59,354 ft. 1 x 6-12" 1sts and 2nds.

HACKBERRY

50,200 ft. 1" No. 2 Com.
8,250 ft. 8/4 L. R.—largely No. 2 Com.

SOFT MAPLE

11,761 ft. 4/4 Log Run.

HONEY LOCUST

37,400 ft. 6/4 Log Run.

FIGURED RED GUM

10,429 ft. 1" 1st and 2nds Plain.
26,241 ft. 1" No. 1 Com. and Sel. Plain.

RED OAK

73,126 ft. 1" 1st and 2nds.
721,062 ft. 1" No. 1 Com. and Selects.
419,007 ft. 1" No. 2 Com.
266,149 ft. 1" No. 3 Com.
29,241 ft. 8/4 1st and 2nds.
132,147 ft. 8/4 No. 1 Com. and Selects.
26,092 ft. 8/4 No. 2 Com.
87,987 ft. 10/4 1st and 2nds.
92,096 ft. 10/4 No. 1 Com. and Selects.
9,500 ft. 1" 1st and 2nds Qtd. White.
24,970 ft. 3/4 No. 1 Com. Qtd. White.
5,460 ft. 3/4 No. 1 Com. Qtd. Red.
134,445 ft. 3/4 No. 1 Com. Plain White.
2,865 ft. 3/4 No. 2 Com. Plain White.

PECAN HICKORY

26,300 ft. 1" Log Run.
144,190 ft. 8/4 Log Run.
14,625 ft. 6/4 Log Run.
11,550 ft. 10/4 Log Run.
10,143 ft. 12/4 Log Run.

MISSISSIPPI ELM

57,116 ft. 6/4 Log Run.
39,142 ft. 6/4 No. 2 Com.
46,992 ft. 8/4 Log Run.
34,414 ft. 12/4 Log Run.

QTR. SAWN BLACK GUM

12,146 ft. 1" Log Run.
11,421 ft. 8/4 1st and 2nds.
19,140 ft. 8/4 No. 1 Com. and Selects.
13,291 ft. 8/4 No. 2 Com.

WHITE CANE ASH

8,141 ft. 1" Log Run.
55,142 ft. 1" No. 1 Com. and Selects.
54,296 ft. 1" No. 2 Com.
44,283 ft. 1" No. 3 Com.

8/4 DOG BOARDS—SMALL % 6/4

11,261 ft. Cypress.
7,440 ft. Elm.
33,280 ft. Sap Gum.
33,860 ft. Sycamore.
23,040 ft. Hackberry.
3,840 ft. Ash.

SYCAMORE

31,247 ft. 5/4 1st and 2nds.
59,403 ft. 6/4 1st and 2nds.
104,937 ft. 6/4 No. 1 Com. and Selects.
60,528 ft. 1" No. 2 Com.
19,249 ft. 5/4 No. 2 Com.
48,104 ft. 6/4 No. 2 Com.
12,146 ft. 6/4 No. 3 Com.
23,107 ft. 4/4 No. 3 Com.

TUPELO

140,020 ft. 1" No. 1 Com. and Selects.
27,240 ft. 1" No. 2 Com.

ABERDEEN LUMBER COMPANY, - Pittsburgh, Pa.



Band Mill and Yards, Memphis Plant

"Direct from Producer to Consumer"

Stock List—Prices F.O.B. Memphis, Tenn.

PLAIN RED OAK

115M' 5/4 1s and 2s	\$67.00
152M 6/4 1s and 2s	68.00
130M 8/4 1s and 2s	80.00
12M 10/4 C. and B.	\$70-90.00
115M 11/4 C. and B.	70-90.00
122M 12/4 C. and B.	70-90.00
23M 15/4 C. and B.	75-95.00
5M 4/4 No. 1 Com.	38.00
115M 5/4 No. 1 Com.	44.00
440M 6/4 No. 1 Com.	45.00
70M 8/4 No. 1 Com.	53.00
3M 12/4 No. 1 Com.	70.00
8M 5/4 No. 2 Com.	30.00
20M 6/4 No. 2 Com.	32.00

CEDAR

6M' 4/4	\$100.00
---------	----------

ASH

5M' 10/4 C. and B.	\$90-110.00
45M 12/4 C. and B.	95-115.00
6M 16/4 C. and B.	100-120.00
10M 4/4 No. 1 Com.	40.00
135M 5/4 No. 1 Com.	45.00
37M 6/4 No. 1 Com.	50.00
9M 8/4 No. 1 Com.	60.00
12M 4/4 No. 2 Com.	28.00
7M 5/4 No. 2 Com.	30.00
60M 6/4 No. 2 Com.	30.00

CYPRESS

12M' 4/4 Shop	\$35.00
8M 4/4 Com.	31.00
2M 6/4 Com.	31.00

COTTONWOOD

60M' 4/4 1s and 2s	\$40.00
15M 9-12 in. Box Boards	50.00
30M 13-17 in. Box Boards	60.00

C. & B. QRTD. SAP GUM

70M' 12/4	\$38-45.00
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QRTD. WHITE OAK

11M' 4/4 1s and 2s	\$107.50
11M 6/4 1s and 2s	110.00
20M 8/4 1s and 2s	120.00
2M 3/4 Com. and Btr.	
48M 4/4 No. 1 Com.	68.00
45M 5/4 No. 1 Com.	75.00
85M 6/4 No. 1 Com.	75.00
12M 8/4 No. 1 Com.	80.00
13M 4/4 No. 2 Com.	38.00
4M 6/4 No. 2 Com.	38.00
2M 8/4 No. 2 Com.	38.00

C. & B. PLAIN RED GUM

280M' 4/4	\$35-48.00
120M 5/4	36-49.00
350M 6/4	37-50.00
4M 8/4	39-52.00

C. & B. QRTD. RED GUM

181M' 6/4	\$43-53.00
31M 8/4	45-55.00

LOG RUN ELM

42M' 6/4	\$30.00
102M 8/4	32.00
30M 10/4	38.00
120M 12/4	38.00

4/4 LOG RUN WALNUT

7M' No. 1 Com.	\$60.00
No. 2 Com.	40.00

GUM BOX BOARDS

100M' 13-17"	\$44.00
58M 9-12	38.00

PLAIN WHITE OAK

2M' 3/4 C. and B.	
11M 6/4 1s and 2s	\$78.00
11M 8/4 1s and 2s	85.00
6M 10/4 C. and B.	70-90.00
23M 11/4 C. and B.	70-90.00
18M 12/4 C. and B.	70-90.00
19M 15/4 C. and B.	75-95.00
82M 5/4 No. 1 Com.	44.00
48M 6/4 No. 1 Com.	48.00
166M 8/4 No. 1 Com.	55.00
147M 4/4-6/4 No. 3	18.00
125M 4/4-6/4 No. 2	28-30-32.00

PLAIN SAP GUM

10M' 4/4 13" and up	\$38.00
35M 4/4 1s and 2s	34.00
128M 5/4 1s and 2s	35.00
9M 6/4 1s and 2s	36.00
70M 8/4 1s and 2s	37.00
260M 5/4 No. 1 Com.	29.00
120M 8/4 No. 1 Com.	31.00
234M 4/4 No. 2 Com.	23.00
20M 5/4 No. 2 Com.	24.00
115M 6/4 No. 2 Com.	24.00
12M 8/4 No. 2 Com.	25.00
12M 10/4 No. 2 Com.	26.00
22M 12/4 No. 2 Com.	26.00

HICKORY

15M 8/4 L. R.	85-60-40.00
18M 6/4 No. 3 Com.	\$18.00
5M 5/4 No. 3 Com.	18.00
3M 8/4 No. 3 Com.	18.00

TUPELO

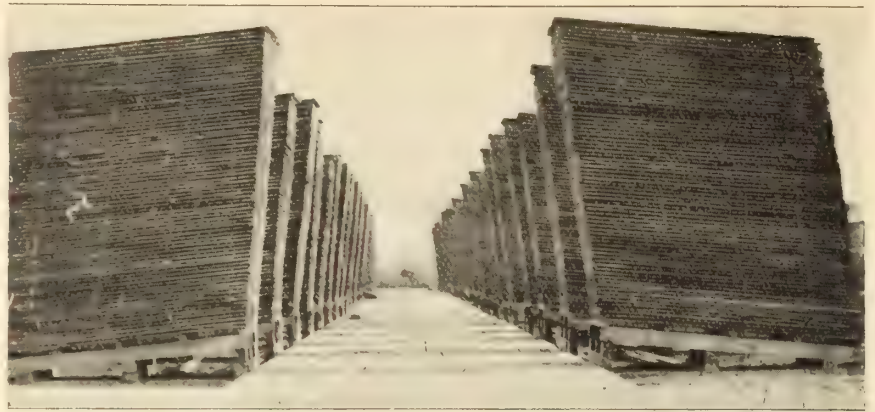
6M' 4/4 1s and 2s	\$33.00
5M 6/4 1s and 2c	34.00
3M 6/4 Common	29.00

Wire your orders at our expense

GAYOSO LUMBER COMPANY

MEMPHIS, TENNESSEE

Two Conclusive Proofs Why You Should Buy Your Lumber From Us



Examine closely the picture above, then read the following letter we received a few days ago from one of the largest manufacturers of Mouldings in the world. (Lumber for Mouldings must be absolutely flat and straight.)

"We have been using exclusively gum lumber, both sap and red, shipped by you for the last three years, and have been well pleased with its character, both as to grade and condition. The condition of same being an evidence of careful handling before shipping. We have been well pleased with the transactions which we have had with you, and will endeavor to continue using your stock as long as available."

We also manufacture Oak, Ash, Elm, and Cypress at Louise, Miss., mills. Get our prices before placing your orders and become a SATISFIED user of Gum or one of the other Southern hardwoods.

BARR-HOLADAY LUMBER CO.

GREENFIELD - OHIO

& YET AGAIN

here's proof that we are
not only PULLING
FOR GOOD OLD

OAK

but also for those
WHO SELL IT—

IS THIS YOU?

Month by month we
are working on the
CONSUMER

(Your Customer)
for a big, strong
"COME-BACK"

of OAK!

Watch us!

Does your line
meet the issue?
If not, it can
by next season.

AMERICAN OAK MFRS' ASSN.,
LET US CONSULT TOGETHER FOR THE GOOD OF
ALL CONCERNED. WRITE US. WE'LL ANSWER.
ROOM 1408, 14 MAIN STREET, MEMPHIS, TENNESSEE

"The Return of the Prodigal Taste"—a true story in one adv. (see below)

STILL ANOTHER OAK FURNITURE ADV. APPEARING
IN THE BEST MAGAZINES FOR AGRICULTURE.



"THE BASIS OF FURNITURE COMPARISONS"

The following conversation really happened once that we know of. Probably it is paralleled many times—the country over. (Perhaps by you.)

"Every time I look around our new home, dear, I am thankful to the architect for being so insistent about this OAK furniture. He said we'd have to do a lot of insisting to get really good furniture in this noble wood—and it certainly is worth all the insisting we did."

"Well, I told you we had an architect who was well-grounded in his taste and his knowledge. He said..."

GEO. C. BROWN & COMPANY

Band Mill, Proctor, Ark.

Main Office, Memphis, Tenn.

Canadian Representative: M. E. Cummings, 814 Richmond Ave., Buffalo, N. Y.

St. Francis Basin Hardwoods Tennessee Aromatic Red Cedar

"We are enclosing check for the last car of Kraetzer Cured Gum, and will say that it was very nice stock, showing apparent care in its preparation and in manufacture, as well as being a high grade of No. 1 Com."

Selection from a letter written us by a satisfied user of our stock. Many other letters reproduced in our booklet "WHAT OTHERS SAY"—yours for the asking—may we send it?

DELIVERED PRICES AND DESCRIPTIONS CHEERFULLY FURNISHED

Oak Timbers Cut to Order

SAP GUM (Kraetzer cured)		Feet	QUARTERED RED OAK		Feet
4/4" Panel	...	14,000	3/4" No. 1 Com. and Sels.	...	2,050
4/4 Box Boards, 13-17 in.	...	75,000	4/4 1st and 2nd	...	7,000
4/4 Box Boards, 9-12 in.	...	100,000			
4/4 Box Boards, 7-12 in.	...	125,000			
4/4 1st and 2nd, 13-17 in.	...	100,000			
4/4 1st and 2nd, 6-12 in.	...	200,000			
4/4 No. 1 Common	...	250,000			
4/4 No. 2 and 3 Common	...	200,000			
5/4 No. 1 Common	...	35,000			
6/4 No. 1 Common	...	100,000			
6/4 No. 2 and 3 Common	...	500,000			
8/4 No. 2 and 3 Common	...	30,000			
SELECTED RED GUM—PLAIN		Feet	PLAIN WHITE OAK		Feet
4/4" 1st and 2nd	...	250,000	5/4" No. 1 Common and Sels.	...	35,000
4/4 No. 1 Common	...	500,000	5/4 No. 2 Common	...	6,000
5/4 1st and 2nd	...	25,000	6/4 1st and 2nd	...	6,000
5/4 No. 1 Common	...	45,000	6/4 No. 1 Com. and Sels.	...	70,000
6/4 1st and 2nd	...	50,000	6/4 No. 2 Common	...	58,000
6/4 No. 1 Common	...	150,000	8/4 No. 1 Com. and Sels.	...	7,000
8/4 No. 1 Common	...	40,000	10/4 Common and Better	...	5,000
SELECTED RED GUM—QTRD.		Feet	PLAIN RED OAK		Feet
4/4" 1st and 2nd	...	150,000	4/4" 1st and 2nd	...	10,000
4/4 No. 1 Common	...	250,000	4/4 No. 1 Com. and Sels.	...	50,000
5/4 1st and 2nd	...	15,000	4/4 No. 2 Common	...	40,000
5/4 No. 1 Common	...	30,000	5/4 No. 1 Common and Sels.	...	6,000
6/4 1st and 2nd	...	16,000	5/4 No. 2 Common	...	9,000
6/4 No. 1 Common	...	23,000	6/4 No. 1 Com. and Sels.	...	40,000
8/4 1st and 2nd	...	15,000	6/4 No. 2 Common	...	35,000
8/4 No. 1 Common	...	30,000	8/4 No. 2 Common	...	5,000
10/4 No. 1 Com. and Better	...	16,000			
12/4 No. 1 Com and Better	...	30,000			
SELECTED RED GUM—Plain, Figured Wood		Feet	MIXED OAK		Feet
4/4" 1st and 2nd	...	58,000	4/4" No. 3 Common	...	200,000
			6/4 No. 3 Common	...	100,000
SELECTED RED GUM—Qtrd., Figured Wood		Feet	SOFT ELM		Feet
4/4" 1st and 2nd	...	33,000	4/4" Log-run	...	200,000
5/4 1st and 2nd	...	10,000	4/4 No. 3 Common	...	30,000
8/4 1st and 2nd	...	12,000	6/4 Log-run	...	100,000
10/4 1st and 2nd	...	5,000	6/4 No. 3 Common	...	90,000
QUARTERED WHITE OAK		Feet	8/4 Log-run	...	150,000
4/4" 1st and 2nd, 8 in. and wider	...	9,000	12/4 Log-run	...	35,000
6/4 1st and 2nd	...	4,000			
6/4 1st Common and Sels.	...	3,000			
			SOFT MAPLE		Feet
			4/4" Log-run	...	60,000
			4/4 No. 3 Common	...	12,000
			6/4 Log-run	...	25,000
			6/4 No. 3 Common	...	21,000
			8/4 Log-run	...	60,000
			10/4 Log-run	...	25,000
			16/4 Log-run	...	37,000
			8/4 Log-run Hackberry	...	15,000
			6/4 Log-run Sycamore	...	5,000
			8/4 Log-run Sycamore	...	20,000

**If interested in Tennessee Aromatic Red Cedar it will pay you to write us at once
WE CAN LOAD MIXED CARS OF HARDWOODS WITH CEDAR BOARDS.**

Dry Spruce and Birch

Good Stocks, Prompt Shipments, Satisfaction

C. A. SPENCER, Limited

Wholesale Dealers in Rough and Dressed Lumber

Offices—500 McGill Building
MONTREAL - - - Quebec

Hardwood Lumber

10 cars—2¼ and 2½ in. Bending Oak.

12 cars—1 in. FAS. Red and White Oak.

7 cars—1 in. No. 1 Com. Red and White Oak.

6 cars—1 in. No. 1 Com. & Btr. Qtd. W. Oak.

4 cars—1 in. Log Run Basswood.

2 cars—2½ in. No. 1 Com. & Btr. Dry Hard Maple.

3 cars—4 in. No. 1 Com. & Btr. Green Hard Maple.

We Have Quite a Complete Stock of Plain and Quartered Red and Sap Gum—Send Us Your Enquiries

THE E. & W. LUMBER CO.

South Bend, Indiana

F. T. DOOLEY, President.

T. E. JONES, Secy.-Treas.

F. T. Dooley Lumber Co.
Inc.

MANUFACTURERS and WHOLESALERS
of

**SOUTHERN
HARDWOODS**

Plain and Quartered Oak
Cypress, Gum, Ash
Soft Maple and Elm

Send us your inquiries

Memphis ∴ ∴ Tennessee

Immediate Delivery

We have on hand ready
for immediate shipment

Basswood

1" and 1¼"—1st and 2nd

Maple

1" 2" — 3"

Above is exceptionally
fine stock. Write us
your requirements.

The McLennan Lumber Co.

MONTREAL

QUEBEC

Limited

**American Hardwood
Lumber Co.**

St. Louis, Mo.

Large stock of—

**Dry Ash, Quartered Oak
Plain Oak and Gum**

Shipments from — NASHVILLE, Tenn.,
NEW ORLEANS, La., and BENTON, Ark.

"Furniture in England"

This book is an encyclopaedia of artistic
suggestion—an education in itself.

Upwards of 400 exquisite
half-tone and color plates
on pages 14 ins. x 10 ins.

Price \$12.00—Delivered to any address in Canada.

Copies may be obtained from

The Woodworker Publishing Co.

Toronto

Limited
Ontario

American Black Walnut

FIRST IN WAR

for gunstocks and propeller blades when human lives and even nations were at stake AMERICAN BLACK WALNUT ranked first

FIRST IN PEACE

For two centuries WALNUT has been America's leading cabinet wood. Without a rival for perfect wood working qualities, with a rare beauty of figure and color, it has been the favorite among those of discriminating taste. It doesn't grow shabby with age. Your grand children will cherish walnut furniture rather than send it to the junk dealer.

Plenty of Walnut

The effort necessary to produce millions of gunstocks and millions of feet of propeller lumber brought out Walnut in almost unbelievably vast quantities. Now that Walnut has done its full share in the war there remains a visible supply for peace time use undreamed of a few years ago. Manufacturers are fully stocked on logs and have a permanent supply of standing timber in sight. Consumers have positive assurance that all present and future needs in walnut can be fully supplied.

WRITE

American Walnut Manufacturers' Association

GEO. N. LAMB. Secretary

312 McLachlen Bldg., WASHINGTON., D. C.

It's all in The Grade



WE emphasize that every board cut from our mills that comes within the definition of a certain grade is kept right in that grade until the shipment reaches your factory. While it is a comparatively simple matter to hold out a good share of the high line boards and still keep the shipment within grade specifications, it is, in our opinion, merely a matter of good business to demonstrate the exceptional quality of our timber by putting in the full product of the log in each grade.

Boiled down this means you can be certain of getting exactly what you buy when placing your orders with the Wisconsin Lumber Company. The same sincerity of purpose is an equally binding guarantee of quality of manufacture and care in handling each man's order. Our timber was purchased and our mills and yards constructed with that idea in mind.

It is our policy to consider each customer as a personal friend whose interests we are going to guard in every possible way.

Sincerely,

WISCONSIN LUMBER CO.

CHICAGO
BAND MILLS DEERING, MO.

WIS →

Indiana

Quartered Red and White

OAK

1,000,000 feet of dry stock carried
at all times.

ALSO PLAIN OAK AND ASH

We manufacture all stock carried.

Evansville Band Mill Co.

FRANK M. CUTSINGER, Pres.
GEO. H. FOOTE, Vice-Pres. & Treas.
JOSEPH WALTMAN, Secretary

Mills at EVANSVILLE, Indiana

HARDWOODS

The following is a partial list of lumber
which we have on hand, ready for quick
shipment.

ASH

1" FAS & No. 1 Com. 38,740'
2" FAS & No. 1 Com. 28,200'
2½" FAS & No. 1 Com. 30,004'
3" FAS & No. 1 Com. 39,608'

BASSWOOD

3" FAS & No. 1 Com. 11,080'

BEECH

5/8" Log Run.....21,200'
2" Log Run.. ..12,700'

SOFT ELM

5/8" Log Run21,200'
1½" FAS & No. 1 Com. 24,300'
2" FAS & No. 1 Com. 95,273'
2½" FAS & No. 1 Com. 71,533'
3" FAS & No. 1 Com. 40,338'
4" FAS & No. 1 Com. 12,300'

HICKORY

1" FAS & No. 1 Com. 11,500'
1½" FAS & No. 1 Com. 31,780'

2" FAS & No. 1 Com. 27,418'
2½" FAS & No. 1 Com. 41,753'
3" FAS & No. 1 Com. 14,457'

PLAIN OAK

1" FAS & No. 1 Com. 217,650'
1½" FAS & No. 1 Com. 13,400'
1½" FAS & No. 1 Com. 60,000'
2" FAS & No. 1 Com. 125,953'
2½" FAS & No. 1 Com. 99,486'
3" FAS & No. 1 Com. 161,017'
4" FAS & No. 1 Com. 50,526'

HARD MAPLE

1" FAS & No. 1 Com. 17,820'
2" FAS & No. 1 Com. 29,935'
2½" FAS & No. 1 Com. 97,296'
3" FAS & No. 1 Com. 28,676'

SOFT MAPLE

1" Log Run15,100'
2" Log Run12,980'
2½" Log Run34,332'
3" Log Run16,280'

Our stock is first-class, and we guarantee satisfaction with
every shipment.

John I. Shafer Hardwood Co.

Farmers Trust Building
SOUTH BEND, IND., U.S.A.

We Operate 4 Band Mills

and carry large stocks of

Quartered White Oak
Quartered Red Oak
Plain White Oak
Plain Red Oak

Ash
Poplar
Hickory
Walnut

Gum
Elm
Maple, etc.

Crating and Dimension Stock a Specialty.

Can furnish you highly satisfactory
stock at right prices—TRY US.

MALEY & WERTZ

EVANSVILLE, INDIANA

Churchill-Milton Lumber Co.

Sales Office: Greenwood, Miss.

Mills—Greenwood, Miss.; Glendora, Miss.

Let us have your enquiries for—

Ash

Plain Oak

Quartered
White Oak

Quartered
Red Oak

Elm

Tupelo

Cottonwood

Plain Red
Quartered Red

Sap

Qtd. Red, Sap
No Defect

G

U

M

OUR SPECIALTY IS DELTA GUM

I have the following stock for immediate shipment

- 1 Car 2 in. and 3 in. Hard Maple.
- 1 " 2 in. and 3 in. Soft Elm.
- 1 " 2 in. Canadian White Oak.
- 1 " 1 in. and 2 in. White Ash.
- 1 " 1 1/4 in. Basswood.
- 1 " 1 in. Basswood.
- 1 " 2 in. Canadian Chestnut.
- 3 " 1 in. Spruce Crating.
- 5 " 5/8 in. Spruce Crating.

Besides the above stock I can supply anything in Oak, Gum, Chestnut and White Oak from 1/4 in. to 4 in. West Virginia stock either plain or quarter sawn. Try a car of my West Virginia Plain White Oak and Chestnut.

Excelsior and Wood Wool always on hand in Kitchener.

Write, Wire or Phone Your Inquiries

PERCY E. HEENEY

202 Weber Chambers, KITCHENER, ONT.

BLACK WALNUT

Large Stock ready for immediate shipment, also Well Assorted Stocks at our Yards and Mills

in West Virginia and Kentucky

O A K

Maple, Hickory, Chestnut
Basswood and Poplar

Prices and stock list on request

Burns & Knapp
Lumber Company
CONNEAUTVILLE, PA.

Dry Stock on Hand at our West Virginia, Kentucky, Tennessee and Mississippi Band Mills

QUARTERED WHITE OAK

- 30 M ft. 4/4 1s and 2s.
- 40 M ft. 4/4 No. 1 Com.
- 60 M ft. 4/4 No. 2 Com.
- 33 M ft. 5/4 1s and 2s.
- 26 M ft. 5/4 No. 1 Com.
- 10 M ft. 6/4 1s and 2s.
- 60 M ft. 6/4 No. 1 Com.
- 140 M ft. 4/4 2 1/2 to 3 1/2 Strips.

PLAIN WHITE OAK

- 120 M ft. 4/4 1s and 2s.
- 68 M ft. 4/4 No. 1 Com.
- 80 M ft. 4/4 No. 2 Com.
- 60 M ft. 5/4 1s and 2s.
- 70 M ft. 5/4 No. 1 Com.
- 33 M ft. 6/4 1s and 2s.
- 72 M ft. 6/4 No. 1 Com.
- 80 M ft. 8/4 1s and 2s.
- 43 M ft. 8/4 No. 1 Com.
- 120 M ft. 10/4 Com. and Better.
- 50 M ft. 10/4 Wormy.
- 140 M ft. 12/4 Com. and Better.

PLAIN RED OAK

- 68 M ft. 4/4 1s and 2s.
 - 26 M ft. 4/4 No. 1 Com.
 - 70 M ft. 5/4 1s and 2s.
 - 80 M ft. 5/4 No. 1 Com.
 - 20 M ft. 8/4 1s and 2s.
 - 30 M ft. 8/4 No. 1 Com.
- All the above exceptionally fine soft textured stock, good widths and lengths. Can cut Special Oak Bills.

POPLAR

- 38 M ft. 4/4 1s and 2s.
- 40 M ft. 4/4 Saps.
- 20 M ft. 4/4 Selects.
- 59 M ft. 4/4 No. 1 Common.
- 80 M ft. 4/4 No. 2 Common A
- 60 M ft. 4/4 No. 2 Common B
- 140 M ft. 5/4 All grades now sorting.
- 200 M ft. 6/4 All grades now sorting.
- 108 M ft. 8/4 All grades now sorting.

- 20 M ft. 10/4 Common and Better.
 - 30 M ft. 12/4 Common and Better.
 - 10 M ft. 16/4 Common and Better.
- All the old-fashioned virgin soft textured mountain stock.

ASH

- 120 M ft. 4/4 Log Run.
 - 90 M ft. 6/4 Log Run.
 - 10 M ft. 8/4 Common and Better.
 - 20 M ft. 8/4 No. 2 Common.
 - 50 M ft. 10/4 Common and Better.
 - 80 M ft. 12/4 Common and Better.
 - 20 M ft. 16/4 Common and Better.
- All good tough stock. Will sell on grade.

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Two Million Feet, all grades and thicknesses, both Plain and Quartered, at our Mississippi Mills, DRY.

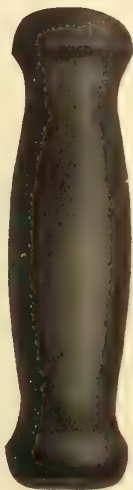
Write for our attractive delivered prices on any of the above; also a full description of our stock.

The W. E. Heyser Lumber Company

Main Office, 1509-13 Union Trust Bldg., CINCINNATI, OHIO

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Plain, Straight and Spiral Grooved



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Sawmills at Zebra and Orillia, Ont.
Cable Address: "Special," Orillia, Can.

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Incorporated

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This Company markets only the products of its own Band Mills located at

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ST. LANDRY, LA.

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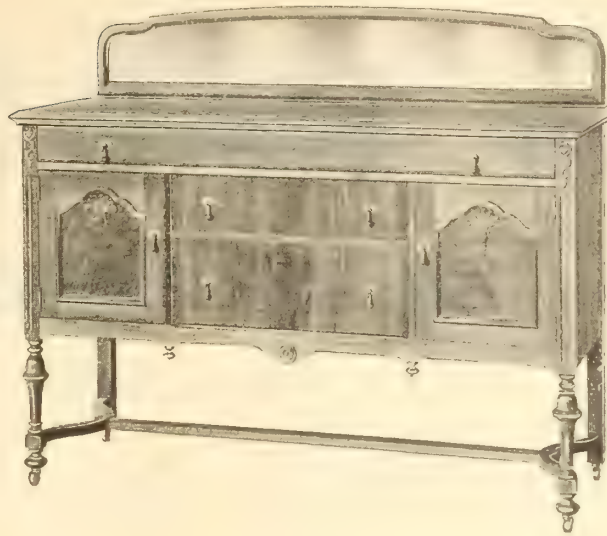
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A Monthly Publication of Trade News and Practical Information, reaching the factories producing Interior Finish, Doors, Sash, Flooring, Boxes, Aeroplanes, Furniture, Pianos, etc.

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No. 3

Material Decrease in Woodworking Costs Unlikely

The present seems to be an opportune time for the woodworker and furniture manufacturers to inaugurate a publicity campaign. The impression seems to be abroad that the present is not the best time to build or furnish a home; that perhaps by next year or the year after prices will have returned to pre-war levels.

People cautiously remark to each other that it would be unwise to think of furnishing a house at present prices that it would be better to wait until all the men have returned from overseas and business has been readjusted to meet the new conditions.

We are in the midst of an era of new values. The buyer must be educated to accustom themselves to new conditions. If there is a drop in values it will, in all probability, be a very gradual one, and it is doubtful if the prices of many commodities will ever be as low as they were.

This is perhaps more applicable to wood products and furniture than to any other line. The woodworker has seldom received an adequate return for the capital invested. Recent investigations made in the furniture business show that, on the average, the furniture manufacturer has only been receiving a return of from one and one-half to three per cent. on the capital invested. The same is true, in a greater or lesser degree, of all wood working plants. This fact, coupled with the present cost of raw material and labor, and that any readjustment in manufacturing costs must necessarily be gradual, precludes, for some time to come, any marked lowering of the present prices of wood products.

The idea of value possessed by the average person is a comparative one. They look back to the old prices and compare them with those of to-day, but fail to

make a similar comparison between conditions that govern the different costs. If spruce had been selling at \$100.00 per thousand and the present price was \$50.00 it would be considered cheap, but if \$25.00 was the former price, \$50.00 would be outrageous. Yet the price in each case is the same, only a different standard being used for comparison.

The present is a good time to buy. The public must be convinced that this is true, if we are going to escape a period of wasteful inactivity. We live in an era of higher price levels; the good old days that some love to look back to are past. Present values prevail. The sooner everybody can be taught to believe this the better for all concerned. They need to be shown; to be reasoned with and it will, in all probability, be found that they are ready to adjust themselves to present conditions when the logic of the situation is pointed out to them.

Cost Producing is Essential

A knowledge of costs is the one rock on which to build a successful business. An efficient cost system is the very foundation and unless costs are known the whole business structure is raised on a fabric of guesswork and surmise.

Some time ago the furniture manufacturers realized this fact. They believed that, through not knowing exactly what the cost of each article was, they were not making the profits they were entitled to. Recent investigations have shown that they were right; that their net profits were so small that a small leak or unexpected loss would wipe their earnings out entirely.

To enable them to make the necessary changes they organized a cost accounting department in connection with the furniture manufacturers' association. An expert with years of experience in cost accounting has been placed in charge and devotes his entire time to the different furniture factories, checking up existing systems and making suggestions or inaugurating new methods of keeping tab on costs.

In addition to it being absolutely necessary to know your costs there is an immense amount of satisfaction to be had from the fact that you know that you know your costs. Not only are you sure of your figures when competing against other firms, but you are able to immediately adjust your prices to suit all fluctuation of the labor or supply market.

It is only when the separate value of the labor and the different materials that go to make up an article are definitely known that prices may be intelligently adjusted to suit changing conditions.

The woodworker should look well to his costs to-day. The present and immediate future are full of uncertainties. Rapid adjustments may be necessary. How can he expect to act with quickness and precision if he does not know the true value of the component parts of his many products.

Ideas and Suggestions on Interior Trim—No. 1

Simple Designs in Demand—Stock Cut to Sizes at Factory—Standardization Reduces Expense—Made to Order Material Required

By W. H. Shaw

(This is the first of a series of practical, up-to-date articles on interior trim and different phases of interior construction. The author has had years of practical experience in these lines and his articles should have a strong appeal to all woodworkers. The second article will deal with mock beams, wood cornices and panel-work.—The Editor).

Building is scheduled to take a big boom in Canada as work that was abandoned before and during the war, will be taken up now. Experts look for a large amount of construction work not only in municipal but in private enterprises. With the scheme of both the Dominion and Provincial Parliament of providing public built houses for the people, the private contractor and mill supply man to meet this competition must make a special study of the requirements both from an economical and attractive standpoint.

Next to the design of the house, no one thing has as much to do with the homelike effect as the interior trim, doors, etc. Now is the time, in the writer's opinion, to get away from the made-to-order material, and as far at least as regards interior and exterior frames and interior trim to standardize.

Two Styles of Interior Trim

As to interior trim, we have a choice of two, mitred or mantle head. The latter as to the material cost is higher, but for many reasons is more acceptable to stock, 1st, any shrinkage after is less noticeable in mantle trim; 2nd, no extra labor with mitre if frame is slightly out of square; 3rd, mantle trim fits in with any style of door and decorations to be used, as well as adding weight to the general appearance.

The simplest lines possible are now required in the modern home. The plain bevel base would a few years past not have been considered, whereas today the contractor is relieved of all coping in fitting corners and the house owner of all dust collecting quirks and edges. The same with head mould as plain as possible. In

the case of head mould, one large contractor in Ontario who operates his own shop, has manufactured the head out of 1 ¼ x 5 strip moulded both edges then cut to required length, returned the ends on shaper and then split on fine saw thus overcoming any tearing as is likely on returning a single head.

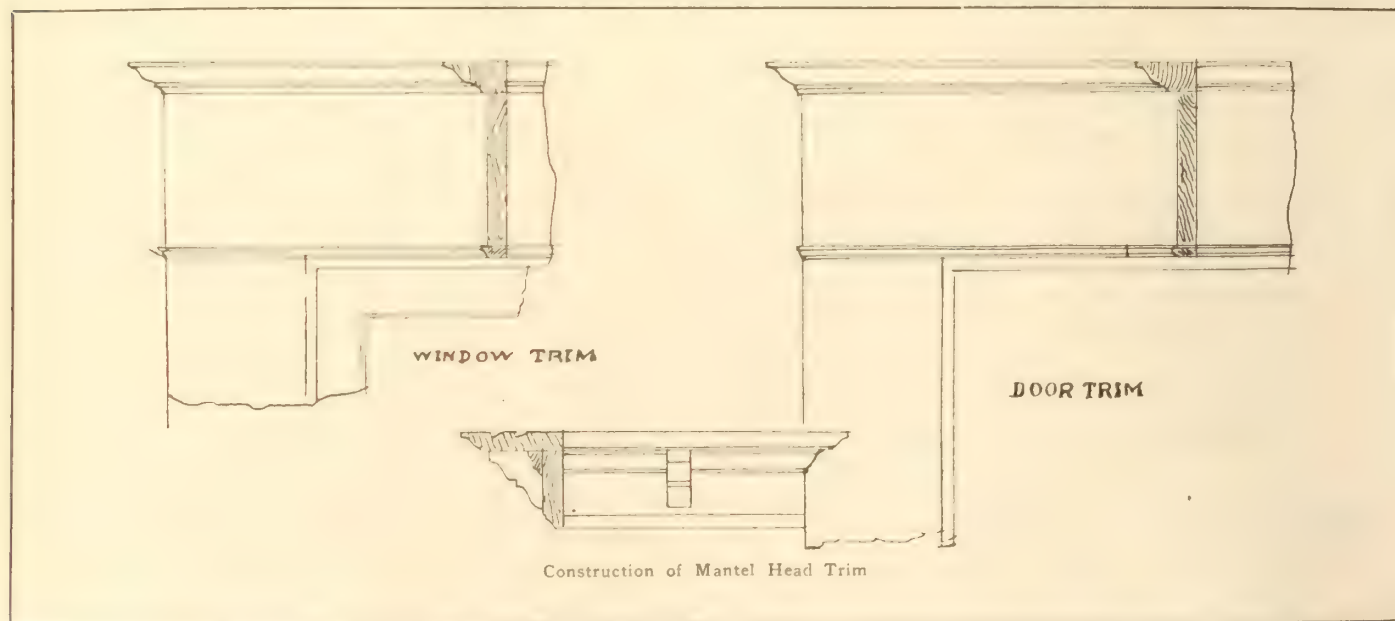
Standardization Reduces Wastage

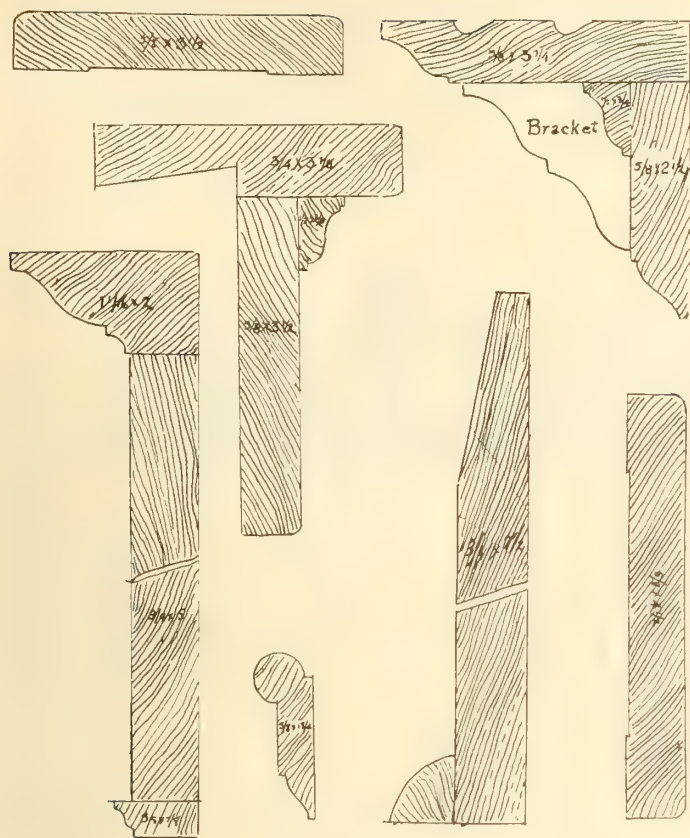
Through common practice we have standardized doors to six different widths and five different heights and why cannot this be accomplished in regard to window frames where as today in an eight-roomed house we have probably seventeen or eighteen windows and about ten different sizes.

Figure this from an economical standpoint both to the millman and contractor. Every builder knows the amount of blocks and useless cuttings left after build-ings are completed which amounts to, according to the skill and good judgment of the man who cuts it up, from fifteen to twenty-five per cent. The waste is governed by the number of sizes you have to cut your material into. The luck you have in getting lengths that will cut to advantage and the number of defects that are in the material, result will be extras on your lumber account that you did not figure on. By using standardized trim, cut to length, built mantle heads, casings, finished base blocks, window stools, aprons, and stops it is made possible for you to know before you start, just what it will cost to trim your building.

As to the economy for the millman. Having hundreds of different sizes to cut, they eliminate practically all the waste. By standardizing in this material they are able to buy in widths and sizes to suit and not be carrying quantities of dead stock. Any one connected with a wood working plant knows that machines are tied up for half the time, making and adjusting knives for special work.

But in stock work a machine is set up and run for days at a time, thus reducing its cost to the minimum.





Details of Trim and Mouldings

The completed article is assembled in quantities, the whole operations being reduced to a simple economical basis.

How it Figures Out

A comparison at present prices:

2/8 x 6/8 door jamb, stop and casing one side.		
17 ft. 7/8 x 5 1/2 door jamb	\$3.50	.60
17 ft. 1/2 x 1 3/4 stop	1.50	.26
2 ft. 1 1/8 x 4 b. block	4.50	.09
12 ft. 7/8 casing	3.00	.36
3 ft. 6 in. 7/8 x 5 1/2 head	4.25	.15
3 ft. 6 in. 1/2 x 7/8 bead	1.00	.04
4 ft. 1-1/16 x 2 cap mould	3.00	.12
and 2/8 x 5 ft. 5 1/2 window frame		
12 ft. 7/8 x 3 3/4 casing	3.00	.36
15 ft. 1/2 x 1 3/8 stop	1.30	.20
3 ft. 6 in. 7/8 x 5 1/2 head	4.25	.15
3 ft. 6 in. 1/2 x 7/8 bead	1.00	.04
4 ft. cap mould	3.00	.12
4 ft. 7/8 x 3 3/4 stool	3.00	.12
4 ft. 5/8 x 3 1/2 apron	3.00	.12
4 ft. 3/8 x 3/4 mould	1.00	.0
		1.15
	\$2.27	
Plus 20 per cent. cutting up waste . .	.46	
	\$2.73	

Let these be marked at a price of say \$1.10 for inside jambs, \$1.60 for door casing complete, and \$2.25 for window trim complete, a total of \$4.95, against \$2.73, and the uncertain price of labor for cutting and working this material up by hand labor on the job.

Prepare for the Coming Expansion

During war times, large factories were built in all parts of the country, but there was always a scarcity of accommodation for the workman, now that construction has started and development of Canada's resources will start, these factories cannot carry on unless houses are constructed. Already manufacturers

are studying the community building scheme. So why not preparedness on the part of the contractor and millman. If they are depending on local trade, now is the time to study the prospects in your own locality. The manufacturer who looks at the outside market will see in this the same argument as with hardwood flooring, that the consumer isn't paying excessive freight rates on waste material, and that always annoying incidents on almost every contract, of please send me a few feet of two or three items to finish and over which there is generally a dispute of charges for setups, etc., are made.

With the high price of labor and shorter hours as at present the manufacturers have more to contend with than ever before. With the made to order material, it has always been a sort of guess work or hit and miss but with standardizing along these lines he can either put a set price on all parts of this work or under a cost system can tell what man and machine are turning out.

With apartment houses, workmen's houses, community building, summer cottages and hotels, that are sure to be erected in the near future, we feel that the standardizing can be introduced to the mutual advantage of millman, contractor and owner.

What Are the Resources of Ungava?

A. M. Tessier, member for Rimouski, desires the Quebec Government to take more interest in the great section of the new country called Ungava, which was annexed to Quebec in 1912, and about which the Government knows little more today than at the time it received this addition. No revenue whatever has been received from the new territory.

One of the biggest lumber men in Canada, in speaking of the Hamilton River, which runs into the ocean at about a point where Labrador joins Ungava, told Mr. Tessier that it was not a dream to believe that at some day in the near future the waterpower from this river could be run through a cable under the ocean to run the cotton mills of Manchester. The report as to the possibilities of water-power of the Hamilton River puts the estimate higher than the Niagara Falls development.

Visits of Trade Commissioners to Canada

Arrangements have been made for the return of a number of Trade Commissioners to Canada this year for the purpose of renewing their acquaintances with industrial concerns and industrial conditions especially. The officers of the Department who have been instructed to return and the approximate dates of their arrivals at Canadian seaports, are as follows:—

J. W. Ross, Shanghai, March 15.
B. S. Webb, Buenos Aires, April 15.
D. H. Ross, Melbourne, May 15.
Harrison Watson, London, June 15.
W. A. Beddoe, Auckland, July 15.
J. E. Ray, Manchester, August 15.
W. J. Egan, Cape Town, September 15.

In addition to this, Trade Commissioners H. H. Poussette and G. B. Johnson, late Trade Commissioners at Buenos Aires and Yokohama, respectively, who have been overseas since the outbreak of war, will be released at no distant date and will return to Canada for the purpose of visiting manufacturers and others, preliminary to their taking up some foreign post for us.



An Up-to-Date Office Furniture Factory in an Enemy Country

By Bdr. H. Bruce Beattie

[In forwarding this article Mr. Beattie says: "You can easily imagine this information was not got by any particular good will on the part of the owners of the plant, who were bitterly hostile to the hated British, and did their best to prevent any visit to their plant, but under the circumstances, their lack of hospitality did not prevent an enterprising Canuck from making a pretty complete survey of their factory. It should prove a rather interesting item for the readers of the "Woodworker."—The Editor].

On a flat about a mile west of a river, a group of low red brick buildings, substantially built and well equipped, constitute, according to the notions of the writer, a strong nucleus for the "Ideal" furniture manufacturing plant. With the main line of the railway a few hundred yards away and the electric tram within easy distance of the city, the place is well situated. The accompanying "plan," while not drawn to scale, gives an idea of the general lay-out. The perspective drawing is from a five-minute impression sketched from a point about three hundred yards up Bruhler Strasse.

Now a word or two on the general equipment, before touching on the various departments. Heating: Steam, flanged coil system. A 3 in. pipe flanged like a motor cycle engine cylinder, running in double lines around four walls of each department. Temperature controlled by an automatic device, 65 to 70 degrees. Lighting: By night, suspended electric arc lamps casting a suffused light into every nook and corner. No individual small lights over machines. Light by day, from large skylight running entire length of each department. Ribbed glass windows are at each end and plain glass windows in side walls, so that it is possible to see from veneer room through to shipping room. The reason for the existence of these windows is that originally the machine, cabinet and shipping rooms were all separate buildings, and later were joined up. Power: Electric, generated on the premises. Individual motor drive in the majority of cases. Where small machines were concerned, one large motor drove three.

All the original main buildings previously referred to, have eight-foot basements. Down in these basements various motors hum, each one mounted on a block of concrete, built into the floor. Each motor, and any attached line of shafting is fenced around with iron piping and wire screen.

All dust and shavings collector pipes, and fans, are down in the basement, out of the way, and so arranged as to be easily accessible to every part. One large double fan, driven directly by a motor of sufficient horse-power, takes care of the refuse from the machine room. Two smaller such combinations do similar work in the cabinet and breaking-out rooms.

The only fire protection was stand pipes and hose with an occasional pail of sand. No fire cut-offs between departments whatever.

Well Equipped Power Plant

The engine, generator and boiler house is equipped in keeping with the rest of the plant. Three large boilers supply steam for dry kiln, heat for buildings and drive the engine. The fires are automatically stoked by gravity, from hoppers above. The coal first comes in, in cars on the railway siding. These cars are turned at right angles on turn-table (see plan) and shoved along to a steel bin, which is under the tracks and in front of the boiler house.

Of course it must be remembered that the European "Railway wagon" is not such a weighty proposition as the C.P.R. or G.T.R. variety, being about one half the length, and running on four wheels only, hence the comparative ease in man handling them on a turn-table. The coal is unloaded from the bottom of the car, and dropped down into the bin beneath, from where an endless belt with buckets or a "worm screw" elevates it to the hoppers above the fire grates. These fire grates are arranged like a set of stairs, and a draught is blown in from underneath.

All the steam and water valve wheels are nickle

plated. Pressure gauges and all instruments of like nature are highly finished. In an adjoining room there is a large water heater tank, a blacksmith's and general repair shop. Various economizers in fuel and water are in use and were elaborately explained by the pains-taking engineer, with the aid of much hand-waving and other gesticulations, commonly in use when any interest is evinced between two men speaking different tongues.

The engine, a "Thing of beauty and joy forever," was a low speed, large fly wheel type, and drove the generator by a rope drive, running in grooves in the face of the fly wheel. Here, all the power necessary for the motors and lighting is generated. There is also a large storage battery room in connection. The switch board is the usual marble slab, set off with ornamental iron work; the whole thing stands on a raised dias at one end of the room.

The lumber, until it is put into the kiln, is piled properly in well ventilated sheds, as shown; some is piled in the open. A system of narrow gauge railway runs from each shed to the dry kiln. A simple turntable in front of each door eliminates the necessity for a transfer car. I am not quite clear on their methods of lumber drying, as my knowledge of the language was insufficient, but judging by outward, modern appearances, I fancy they were not at all behind hand in this important branch. The kiln cars, after the lumber is dried, are run into the cooling shed, directly in rear of the breaking-out room. (See plan.)

A Few American Machines

As the lumber is required the cars are pushed into the swing saws, which are the same pattern as we use at home. Their motors are attached to the wall, on the left hand side and are enclosed in a semi-circular galvanized box. This box lifts off when the motor requires attention. Each swing saw has a neat little motor control box, mounted on four iron legs, just under the table and set so as not to interfere with the operator's feet, when the saw is moved back and forward. Two planers do the rough dressing. A jointer and an immense circular saw with rollers on the table, complete the machinery in this department.

A kiln car, with a load of roughly machined stock, is then run over to the machine room on narrow gauge railway, where a battery of three American, Whitney planers, and a couple of jointers start the process of "transformation." After passing through the planers the stock is then piled on three-wheeled trucks and the kiln car is returned to the lumber shed for re-loading.

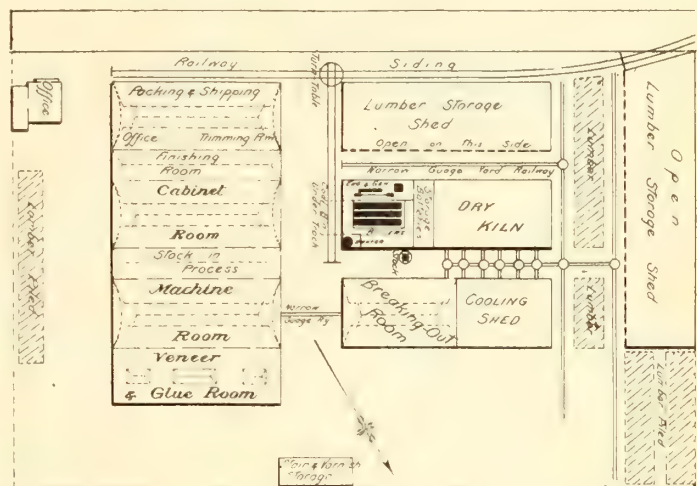
The machine room, which is built exactly like the cabinet and shipping rooms, is about 150 feet long and 60 feet wide. The floor is concrete (bad feature this) and the roof, half of which is ribbed glass skylight is supported by a light circular steel arch, and is a good height off the floor in the centre. There are no roof supports from the floor, no line shafting, no dust and shavings collector pipes visible, with the exception of those parts necessary to lead from the floor up over the cutting heads, as in the case of planers, stickers and sanding machines. Eight strong arc lamps in two rows, suspended from the ceiling, give ample and comfortable light.

Most of the machinery is in the centre of the room and the stock piled on trucks, is pushed over against either wall. An automatic feed jointer of American make, run by three young girls, was the only machine

with the exception of the three Whitney planers, that reminded me of the home side of the Atlantic.

They had a good triple drum roll feed sander, operated by an ex-soldier, still wearing a half of his uniform, including the little round red-banded trench cap, which, up to a few weeks ago, was regarded as a neasily carried souvenir, by us. Would have looked rather odd to a chance observer to have seen the grey cap and the khaki cap bent over, intently peering into the "innards" of a sander. Baeder Adamson and some other makes of sandpaper were used. A girl piled the stock as it was put through the machine. An automatic feed, double cut-off saw was doing good work and it required two men and a boy to run it.

All machines were well "guarded," where possible. Sanders, automatic jointers, etc., where pulleys or gears projected, a box covered the whole side, easily removable when required for oiling or cleaning. The ordinary "finger removing" jointers had no knife-guards, and as they were both running I do not know whether they had round or square heads. Each ma-



Floor Plan of Factory

chine, as in the break-out room, had a neat motor control box mounted on four iron legs, in an out-of-the-way position and yet convenient to the hand.

Tag System Not Used

Apparently no "tag system," for instructions in machining, etc., was used, as no tags were visible on any of the loaded trucks. Probably their line is mostly standardized, being filing cabinets of all shapes and sizes, plain substantial office desks, swivel chairs and stools with and without backs, being made. Still the impression that they were behind in this respect, remains.

Oak, plain and quartered, pine and spruce are the principal woods used.

The veneer and glue room is operated chiefly by four women, but a couple of men do the press work. The machinery consists of two glue spreaders, a glueing trough, a large sized hand press, and one of medium size. A long steam heated plate keeps the zinc cauls warm, when not in use. This glueing trough is constructed on the same principle as the trough on the ordinary glue spreader, being about 10 in. long, 14 in. wide and 18 in. deep, supported on three iron stands, the top of the trough being about 28 in. off the floor. By pressing a foot lever, a perforated plate appears about 1/4 in. above the liquid contents, all sur-

plus glue runs back through the 5/8 in. perforations, leaving only enough on the plate to thoroughly cover the flat joints of the stock laid thereon.

Short light stock which is used for filing cabinets, etc., is very quickly klued and clamped up in this manner. A girl picks up a number of pieces, as many as her hand will span, 12 to 14 in. long and 7/16 in. thick, daubs each row of joints on the perforated plate, spreads them out on the clamp bars, pulls over an eccentric lever, which is set to apply the required pressure and beholds the operation is complete. Taping is done by girls, on long tables.

A Very Practical Veneer Press.

The heavy press, on first sight, looks a formidable machine to operate by hand, but it is really very simple and requires much less energy than some one quarter the size that I have known from personal experience. In this instance, by working a lever back and forth, the lower plate of the press slides out side wise and without the very objectionable guide-bars, or tracks, that usually stick out, always in the way, and a continual menace to the workers.

The screws can be twirled about easily by a flip of the hand, and when the press is about to be used, the screws are lowered to where they will best accommodate. With the plate swung out, the workman can see that the cauls are all properly placed, before the pressure is applied. A few strokes with the lever and the plate or "bed" rolls back to its original position and in an incredibly short time the screws are down and another press full is being prepared. On the smaller press the bed is stationary.

This department is lighted by three large sky-lights and there are ribbed glass windows at each end. No windows are in the outside wall, possibly due to fire insurance regulations on account of stain and varnish storehouse, just outside.

The cabinet room, as previously referred to, is ex-

actly like the machine room in construction and in lighting arrangements. The benches are set at right angles to the walls and well over to the centre of the room. The stock, as it comes in on trucks to be fitted and assembled, is pushed up neatly along the side-walls. All the trucks bearing a certain job are placed opposite one bench, and the completed article goes on to the finishing room down the centre passage between the double row of benches. Several very small jointers and a bandsaw are all the machines used in the cabinet room. Glue pots are set at supposedly convenient points, but this arrangement could stand improvement.

The finishing room is very ordinary. Girls do the staining, shellacing and varnishing, also the sanding. They have no air brush outfit, nor fuming cabinet. All finishes are very simple.

We were led to believe that the enemy was pretty well out of "brass." Even his elaborate brass shell fuses disappeared and thereafter a pot-metal variety only, was used. However, this firm has sufficient for office furniture trimming, such as sheet brass drawer pulls of card holders on filing cabinets, along with sundry embellishments.

The railway siding runs the full length of the shipping room, but one small loading platform suffices to handle the output. Goods are strongly crated up and otherwise well packed.

The office building is an attractive red brick structure, built more like a dwelling than on the convenient lines of the average office building. A clock tower adorns the roof and there is also a bell up there. The stain and varnish storage house stands off by itself as per "plan" and is the usual type of fire-proof building.

I understand that much of the wood-work on their Zeppelins was made at this plant. The same firm owns and operates a large factory nearby, making pen points, pencils and other requisites.

Peace Time Aerial Developments

An Interesting Thought for Wood-workers - Great Headway Has Been Made - Are We On the Eve of Big Developments in This New Field

(By P. E. P.)

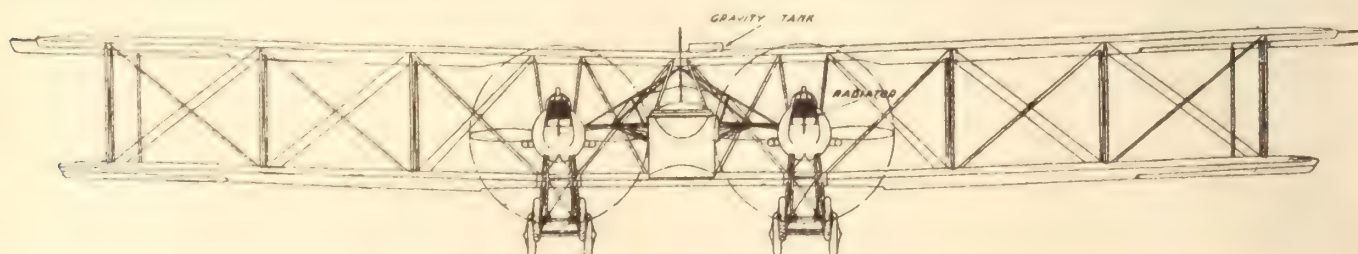
Today one often hears such questions as what are the possibilities of the aeroplane or will aerial transportation ever rival that by rail and water. Owing to the quantities of wood used in the construction of aircraft of all kinds a short review of the situation is of general interest.

Man seems to have been created with a flame of discontent in his make-up and from earliest times the desire to conquer the air appears to have existed. We even read in the mythical stories of the Greeks of an ancient who made a pair of wings out of feathers attached to a frame by wax but who came to a sad end-

ing one day because he flew so high that the heat from the sun melted the wax, thus loosening the feathers and allowing him to fall into the sea and drown.

A Twentieth Century Innovation

While balloons of different types have been known and experimented with for a great many years, it is only during the last thirty years that much real progress has been made. Around the year 1900 Santos Dumont, the South American airman, came into prominence by constructing an airship and encircling the Eiffel tower in Paris. About 1906 or 1907 the Wright



A twin engine biplane

Bros. rose to fame on the wings of an aeroplane that they built and flew successfully. From that time on down to 1914 more and more attention was being given to the navigation of the air. In the years just previous to the great war it had reached the stage where it was a common feature at various shows and where the wealthy young sports in their mad chase for excitement were turning to aeroplanes and hydro-planes as new toys.

The governments of several of the great powers were attracted by the opportunities in the air and numerous experiments had been made and different types of both heavier than air and lighter than air machines had been evolved. But through a slight advance had been made and some knowledge gained we find that the vast possibilities of aircraft, both in war and peace, had not even been dreamed of.

Britain and France were devoting considerable time and study to the aeroplane and types of semi-rigid and non-rigid airships while Germany was bent on developing the rigid type of airship as embodied in the huge Zeppelins she was constructing. America Italy were also working along similar lines. France had, perhaps, made the greatest advancement in aeroplane construction, but even she did not realize its value as a fighting arm.

War Directed Attention to Aircraft

The war had not been underway many weeks before some of the advantages accruing from the use of the air were realized. At first the air service was used as a defensive branch of the army. Aeroplanes were employed, used as scouts to spy on the enemy and as "eyes" to observe and direct the artillery fire. But from a defensive arm it rapidly developed into a defensive and offensive arm of great importance. While the value of aircraft as scouts and observers was never lost sight of, it was in their development as an offensive branch that the greatest strides were made. Had the armistice not put an end to hostilities we would have read of huge offensive operations and aerial battles on an immense scale. Even before fighting ceased we read of bombing operations undertaken by fifty bombing planes, accompanied by a fleet of one hundred and fifty fighting planes. This was only a prelude and we would have heard of aerial raids in which a thousand or more planes took part.

Developed by Leaps and Bounds

As soon as the aircraft had demonstrated their value to the army and navy the different powers inaugurated a feverish race for supremacy in the air. Each strove to out-do the other. New types were designed and built only to give away to better models. The demand was for greater speed and power for the fighting machine and greater lifting power and reliability for the bombing plane. So we find the speed of the plane increasing from 60 to 90 miles per hour, from 90 to 120, to 150, to 160 and there were even whispers of planes that were able to travel at the undreamed of speed of 200 miles per hour. The same applies to the bombing plane. There was a constant increase in the lifting power of these machines, until in the later type was able to carry a load of several tons of bombs and had a radius of about 800 miles.

It is this latter type that offers the greatest possibilities for aerial transportation and passenger service. The bombing plane has been developed into a steady reliable machine, capable of carrying heavy loads over long distances and had been so improved

that today it is a reliable machine. Very few changes would be necessary to adopt this machine to commercial purposes.

The present situation can be briefly summed up as follows: Aeroplanes have been built by the tens of thousands and have demonstrated their values in war and have given promise of even greater things in peace. We have expert aeronautical engineers by the hundred, men who have been trained to design and work out improved types of machines. We have trained pilots by the thousands, trained air mechanics by the tens of thousands, numerous large plants specially designed and equipped to manufacture planes and parts.

Now that hostilities have ceased and with that cessation the demand for planes, is it reasonable to expect that advantage will not be taken of this vast amount of trained help, expert knowledge and the many fully equipped plants, to realize on the possibilities that aerial navigation offers.

When we look around we find that our expectations are justified, that plans are being prepared on all sides to carry on this work, that plants that have stopped the manufacture of war machines have turned their attention to commercial planes and are today advertising freight carrying and pleasure planes for the use of the general public. Both in Britain and the United States commercial planes are being made in small but ever-increasing quantities.

Trans-atlantic Flights Planned

We learn of trans-atlantic flights with passengers being arranged, of postal and express services being inaugurated, of companies being formed and capital raised to embark in this new form of transportation, of city councils considering the advisability of preparing suitable landing grounds. One feels not that there are untold possibilities but that we are on the eve of undreamed of developments in this new field.

The huge rigid and semi-rigid airships must not be overlooked. Like its rival the steamship there does not seem to be any limit to the size and carrying capacity of an airship and in all probability it will be found that this type of craft will solve traffic and will provide a safe, quick and reliable method of carrying freight and passenger. The aeroplane can be used as feeders and distributors and gather the freight and passengers for their bulky brethren. It is a very alluring prospect.

Of course there are many scoffers, people who pooh-hoo the idea. They have always existed and will in all probability continue to exist. Where the steam engine was first run on wheels most people considered it, at the best, only an interesting scientific experiment. They could see no possibility for it commercially and they could see a hundred and one arguments why such a method of transportation was impracticable. Similar when the clumsy steamboat was launched, they smiled at its apparent limitations. They ridiculed the auto, the telephone and wireless telegraphy, yet in spite of their ridicule these foolish ideas are today immense institutions and are of untold service to us. Suggest to some of these that there is a commercial future to the aeroplane or airship, they shrug their shoulders and smile in a superior patronizing manner.

It is been truly predicted by those who know that aircraft is as certain to be the transport method of tomorrow as the steamboat and train were in the days of our forefathers certain to transplant the horse drawn vehicle and wind driven ships.

Promising Future for Phonograph Industry

Present Demand is Good—Big Opening for Canadian Made Instruments—
Views of Representative Manufacturers

One Canadian industry that is enjoying a fair measure of prosperity at the present time is the phonograph industry. At present the number of Canadian made instruments sold is small, in relation to the entire number disposed of in the Dominion. That being the case the opportunities for increasing the output of Canadian made machines are good and this industry should experience a period of expansion for the next few years.

There is a brisk demand for these instruments at present, which coupled with the fact that the number of machines in stock was very low at the first of the year makes it difficult for the manufacturers to supply the demand. A number of new firms have entered this field and those, who were engaged in the manufacture of phonograph cabinets, are enlarging their lines and increasing their output.

Output on the Increase

Production is steadily growing, the number of machines made in 1918 showed a considerable gain over the previous year. One firm is increasing its output for 1919 to approximately 6,000 machines.

Among other factors that contribute to the present day popularity of this instrument is the fact that the manufacturers have realized the permanent value of a really high class machine and have devoted their efforts to bringing out new designs and raising the quality of their product rather than cheapening its production and turning out larger quantities, so that today the phonograph is not only a source of entertainment and enjoyment, but is an attractive addition to the furnishing of any home.

When we consider that the phonograph is a development of the last few years, its growth is none other than remarkable. It was not so many years ago that the talking machine was practically unknown. Many attempts had been made to successfully make a record of sound vibrations. It was in 1887 that Edison first succeeded in recording and reproducing sound waves. This was the humble beginning of this industry. One wonders if Edison remotely realized the possibilities he uncovered when he made his first successful experiment along this line.

Market Not Yet Filled

The limit does not seem to have been reached. While today many homes are being cheered and entertained by its delightful music, yet carefully prepared statistics show that only a small per cent of the possible sales have been made as yet. In addition when we consider that the average life of an instrument is about twenty years, it looks as if the phonograph manufacturers can confidently look forward to an increasing demand for some time to come.

Owing to the uncertainty that prevails in other lines and the fact that business in general has not settled down to a solid basis, one wonders if the present activity in this field is not a passing phase of reconstruction, whether some dealers, and manufacturers too, have not taken up this line more to tide them over these strenuous times, or is it a permanent growth, the result of past organized effort? Will there likely be an over production? Will keener competi-

tion have a tendency to lower the present prices or are prices likely to advance?

A few representative phonograph men were approached on this subject and their views, while not unanimous, are none the less interesting.

Experience of American Manufacturers

"Phonographs have come to stay and there will always be a fair demand for them, but at the present time there is such a large number of companies making phonographs, that it will be impossible for all of



The Lyraphone, Lippert Furniture Co., Ltd., Kitchener, Ont.

them to be successful." declares a leading central Ontario manufacturer who adds. "The experience of phonograph makers in United States has been disastrous. A large number of companies that started in this line have gone out of business and lost the capital they invested.

"Even the retail business is overdone and it will be a very difficult matter for a store only handling phonographs to make it pay, but handling phonographs as a department with other lines should be a good proposition for the retailer. The manufacturers have to take a great responsibility as the business is very technical. It doesn't appear so on the surface, but

when they get into the business they find hundreds of troubles that they have to overcome, and which in overcoming cause heavy losses."

Two Million Machines Required

Here are the views of another enterprising manufacturer. "While there are a great many cheap and inferior cabinets, at the same time, there are aristocrats who intend to remain in business, and quality is every consideration. We may say that this is the only business that we want, and, which is really worth while. At the present time, this business is phenomenal, and it would seem that finished machines, fully equipped, cannot be made fast enough and, from our experience, this will continue for a year, or more, and, no doubt, there will be a reaction, and it will be a "survival of the fittest," later on. although statistics show that the rural sales to the farming community have just begun, and, if this be true, it will require at least another two millions of models to supply the demand in Canada, and, as the life of a phonograph is considered to be good for not longer than twenty-five years; and some which are replaced, today, with modern machines, it would appear that there is, really, no end to it.

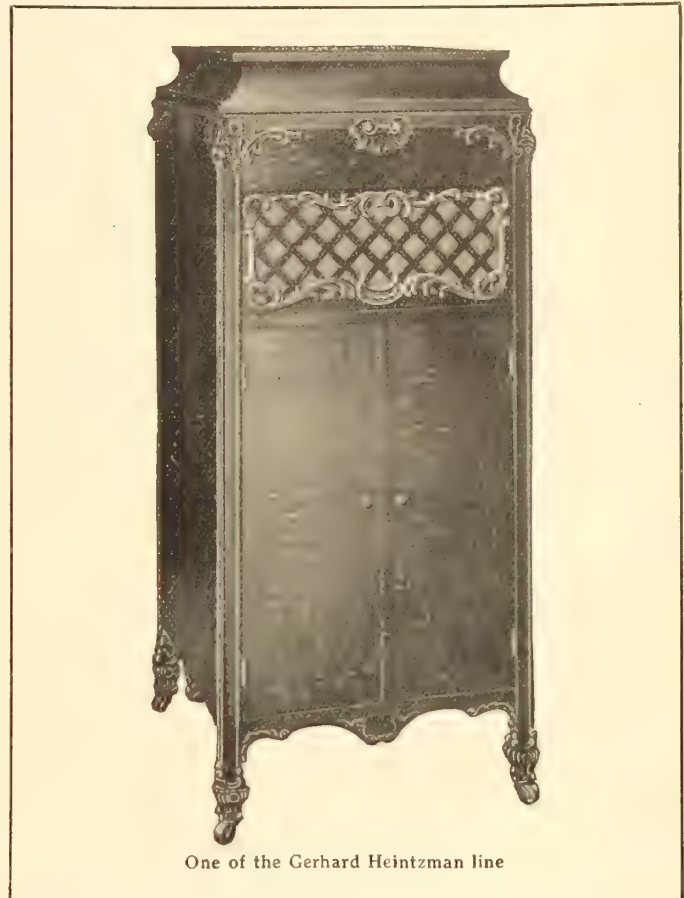
"Then, too, there will, no doubt, be a tremendous export trade. Prices on phonographs will surely advance for the reason that the demand is greater than the supply, at the present time, and, all materials that enter into consideration are holding firm, and this is true of labor, as well.

"In conclusion, there is a great rivalry in artistic patterns among the manufacturers, and, as you are, no doubt, aware, styles are made in many serviceable pieces, such as library tables and pedestals."

Government Should Remove Tax

A widely known Northern Ontario producer says: "We understand that some of the furniture manufac-

reduce the output of furniture for a time, which may be a good thing for the furniture industry as a temporary measure, no doubt when the furniture factories are called upon to supply the usual normal demand for



One of the Gerhard Heintzman line



Italian Renaissance Model Brunswick-Balke Collander Co., Ltd.

their regular lines, they will gradually go back to supplying the furniture trade with the lines that they have been making in former years. The phonograph industry in Canada is at present largely overdone, and the competition is as strong as in any line of manufacture, and if conditions are not improved in the next few months, there will be more of this line on the market than can be disposed of. We have made a quantity of phonograph cases, but up to the present have found the prices are not such as to give a proper profit. There are only a few firms making a high class standard instrument. A large per cent is poor class of instrument and money spent for a cheap instrument is practically thrown away.

"We believe the possibilities of the trade increasing is good, as soon as business gets down to normal conditions, but at present it is like many other lines, of which there is an over production. There is at present the danger of more concerns entering into the manufacture of this line than can find a market for the output. If it has a gradual growth it will eventually grow and become one of our good industries.

"Unfortunately the government has seen fit to put a tax of ten per cent on the manufacture or output of phonograph industry in Canada. This is an unjust tax, but it is to be hoped that the government will reduce this tax or cancel the tax altogether in a short time, and tax the profits only, the same as it will tax all other manufacturers which will give the phonograph manufacturers the same chance to succeed, as is given to other industries."

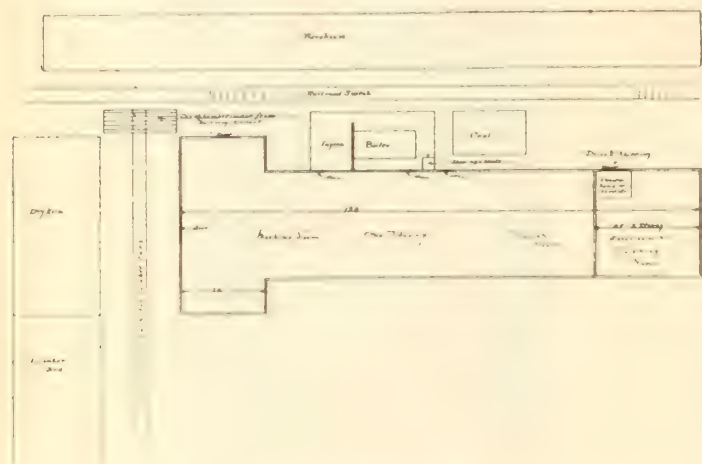
turers have taken on orders for phonograph cabinets. In most cases the prices to be paid for this work is lower than the regular prices paid for the medium and better lines of furniture, and while it may relieve and

Suggestions for a Woodworking Plant

Subscriber Asks for Information for Plant to Manufacture General Woodwork
Convenient and Efficient Lay-Out Presented

Reply by W. J. Beattie

A subscriber in Nova Scotia has written the "Canadian Woodworker" asking for information and suggestions that will assist them in planning and equipping of a new wood working plant that they are about



Layout for proposed factory

to erect. The building they have planned is T shaped and is about 125 ft. long, 40 ft. at wide end and 25 ft. at small end.

They have a large site and intend to erect kiln and lumber shed but desire to have everything as convenient as possible.

Their equipment will include the following: planer and matcher, planer, buzz planer, shaper, bandsaw wood-lathe, variety saw, sander, universal woodworker, tenoner and a few other small machines.

The proposed lines are general woodworking, such as windows, doors, mouldings and trim, builders' supplies and furniture, including mission and bungalow styles.

Mr. W. J. Beattie submits the following suggestions and sketch showing a general layout for a small plant as described.

They appear to have a very good location for receiving and shipping. In building the plant, leave sufficient room between the railroad switch and the factory. It will be convenient to place the power plant, as shown, so as to save any second handling of coal or other fuel that may be brought in by rail and would be just as handy for any other method of haulage.

The door marked "shipping," will be convenient, as the platform of the elevator comes flush with the floor. If no elevator is to be used, it would seem to be the better place for a door in any event, rather than through the front door of the wareroom.

The evident intention is to build a one-storey building for manufacturing purposes, with 25 feet of the front portion, two storeys. Let the building be sufficiently substantial to carry another storey or more, if future business is likely to warrant it, and it is sure to do so.

The line of shafting that will be run through, the machine room, can be suspended from the ceiling and

the hangers braced by rods having turn buckles for adjustment, to keep the shafting in line. It would not be necessary in a building so narrow as this is, to have centre pillars to support the roof, as they would be decidedly in the way. Make the roof substantial enough to carry the shafting and it is surely needless to say, don't stint the admission of daylight.

A track can be run into the building as they show, which will connect at right angles with the other track, shown on the plan, so that a car can be brought directly from shed, kiln, or railway car, into the factory.

As to the location of the various machines, this can be better done by themselves, when the building is completed, as the writer is not well enough acquainted with the lines to be manufactured. Some suggestions, however, may not be out of place. The only machines on the plan they sent, were the planer and the matcher. As these machines will stand at right angles to the main shaft, and the building is narrow, it would be advisable to have a door opposite each one, for the handling of long material. The revised plan shows a door on the side next the railroad switch, as it might be quite reasonable to suppose that they will frequently plane and match lumber directly off the railroad car. The material could be run through the machine on to a car, which would in turn be run out and back to the railroad car, on the lumber car track, if it was to be reshipped at once.

The suggested arrangement of dry kiln and lumber shed would surely be very handy. In any event, handiness is the great thing, so long as you get a good drying out-fit. For a small plant, such as this, a kiln holding 12 to 15,000 feet of lumber will be ample. If found desirable to put the lumber in from the end nearest the switch, in the "progressive" style, do so.

The cars of dry lumber would be discharged directly into the shed, which would have a track in line with the track in the kiln. The lumber cars carry the stock pointing directly in line with the factory, a transfer car runs along the track between the buildings and can be used to obtain any car necessary for delivery by the factory, or for portions of the same.

If the kiln is made with doors facing the factory, the space between the two buildings can be roofed over, which would be a good thing to do no matter which method may be used, putting sky lights in, so as not to darken the work-room, or better still, sky-lights in roof of the factory.

As steam power is apparently going to be used the lay-out offers a suggestion for the convenient location of the boiler and engine, or does the letter sent mean that shafting driven by electric motors will be used, instead of the individual motor driven machines? Anyway, as shafting is to be used, get 3-inch Chapman ball bearing, or roller bearing hangers. If the electric motor drive is used, it will only mean the elimination of the engine, as the boiler will be needed for heating purposes. If motors are to be used for driving the shafting, would suggest that two or three be used, in preference to one large one, and be placed on iron brackets against the wall, which can be made stronger

at that point, rather than suspend them from the ceiling or roof.

The shavings vault will be supplied by the exhaust fan, which could be also fed directly into the furnace.

The writer stands ready to offer any further suggestions that will help your subscriber to build the plant they wish and will consider it a pleasure to help them.

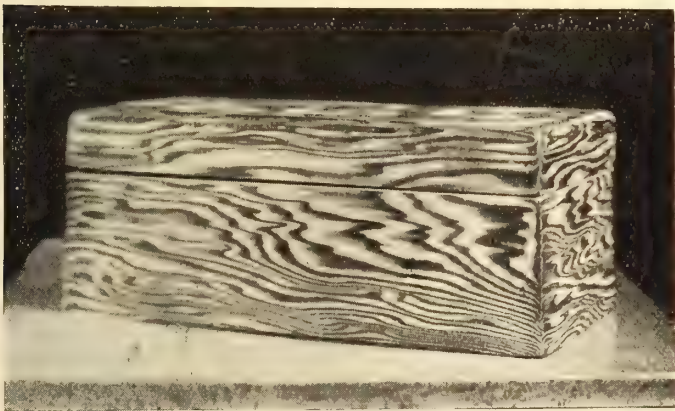
Note.—We would like to have some of our readers send in sketches and suggestions covering this plant. Editor.

A Use for Curly Grain Douglas Fir

By W. Kynock, B.Sc. F., F.E. Forest Products Laboratories of Canada, Montreal

Some years ago the writer experimented with several Canadian woods with the object of ascertaining whether or not the decorative effects obtainable on cypress by means of the so-called "sugi" process could be duplicated on any of these woods. Some very satisfactory results were secured with curly grain Douglas fir and considerable interest in the samples displayed at the laboratories has been shown by visitors. It is hoped, therefore, that some information on this subject may be of interest to others also.

The process itself is said to have originated in Japan. Natural driftwood, thrown up on the seashore after long continued exposure to the action of the water, was observed to have the softer parts of the grain somewhat worn away. The harder portions, being more resistant to erosion, were left standing out in slight relief. Pieces of considerable value for decorative purposes were thus produced. Efforts to secure similar results by artificial means resulted in the discovery that by slightly charring the surface of the wood and then brushing or rubbing out the charred



"Sugi" finish on cigarette box

material artificial "driftwood" even more attractive than the natural product could be made at will.

The harder parts of the grain are merely somewhat darkened by the charring whilst the softer portions are actually slightly burned. Subsequent brushing removes the charred softer material in the form of a fine brownish dust, leaving the darkened harder grain in slight relief. The treatment, therefore, brings out the natural grain or figure of the wood and in addition imparts to it a pleasing soft brownish tone. If the work is properly done there is nothing in the appearance of the finished piece to indicate that heat played any part in its preparation.

A satisfactory and artistic finish of this kind can be secured only on material in which there is a suitable difference in character between the early and late wood

of the annual ring and which shows an attractive figure. Curly grain Douglas fir usually fulfils these requirements in a marked degree.

The wood to be finished should not be less than half an inch in thickness, should be quite flat, should be thoroughly dry (containing not over say 8 per cent moisture on an over-dry basis) and should be planed on the side to be treated. The surface should be lightly, quickly and evenly charred with a gas blow-pipe or gasoline blow-torch. If the piece cups, becoming concave on the heated side, it should be laid aside for a day or two so that moisture may be reabsorbed, the piece then becoming flat as at first. It should next be brushed with a wire brush in one direction only, preferably across the grain, until the desired shade is obtained. The more the wood is brushed the lighter will be the final color. The fine brown dust remaining should then be removed with a very soft brush and the treatment is complete. Further finishing, such as varnishing, painting, waxing, etc., should not be resorted to as it destroys the softness of the tone and entirely spoils the effects.

It should be particularly noted that, owing to the temporary warping action of the heat which is likely to occur, the wood from which any article is to be made should be treated before the article is made up. Small areas, however, may be touched up afterwards if proper care is taken. The work should not show much edge grain but a small proportion of edge grain forms a pleasing contrast if judiciously used.

Curly grain Douglas fir thus finished can be very effectively used in making cigarette, work, glove and other boxes, humidors for cigars, small fancy articles and the small display stands often used in store windows. Suitable pieces at present wasted or used as fuel, but of sufficient size for these purposes, should be available at many mills or factories sawing or using Douglas fir.

The illustration shows a cigarette box and gives some indication of the appearance of the wood when treated as described.

British Trade Returns

British plans for after-the-war trade seem to have been well laid in advance, judging by recent trade returns. Imports in January increased \$85,000,000 over December, while exports gained \$42,000,000. British commerce and finance have flourished despite adverse trade balances. Britain's adverse or import balance for the past six years was over \$14,000,000,000, while United States had a favorable balance of over \$12,000,000,000. The present embargoes on imports into Great Britain have doubtless a bearing on plans to prevent a repetition of this condition. This embargo was exploited for a short time by the anti-British element in the United State and by a percentage of disappointed exporters, but it is evident that the situation is being accepted now with good grace by even those who will suffer by it financially.

Office Specialty Convention

The Office Specialty Manufacturing Co. Ltd., recently held a very successful convention at the Toronto branch of the company. Branch managers and representatives from their Dominion wide organization were present. The company has just completed a very favorable business year, and the prospects for the present year are encouraging.

Essentials for the Sanding Room

Thoroughly Competent Operators—Elimination of Losses Due to Carelessness—
Perfect Adjustment of Machines

By Albert Hudson

If there is any department of a furniture, piano, or sewing machine factory which should be given careful attention, it is that of the sanding room.

This room, with its machines of different types, different classes of work, and varied kinds of sandpapers, is a place where the efforts of all who have gone before may be thrown away. The man in charge of any one of these machines is capable of spoiling more work probably, than anyone else in the whole factory; yet sometimes the attention given to this operation is only casual at the very best. Some manufacturers prefer to take a chance on making their own operators and with that in mind take on green men and teach them the work with special direct reference to sanding only.

Trained New Operators

A manufacturer who had a great deal of trouble with this department, determined to put an end to it. He took three young men and placed them each on a sander. These young men were beginners and very eager to learn, paying particular attention to the instructions given. They were impressed with the fact that they could easily ruin a large amount of work if they were not careful, that if they developed into good, skilled workmen not only would they be assured of increase in pay, but they would never have any trouble in securing a situation. These young men took to the work and by applying what had been told them soon became skilled workmen.

The first requisite to good sanding is of course good machines, kept in proper condition. There are

face imperfectly than apply too much pressure and run the risk of spoiling the work. He should feel his way, running through the work with a minimum pressure and gradually increase it until he learns how much is required. If the work gets too little sanding it is a comparatively simple operation to run it through again and finish it; on the other hand, if the work is veneered and cut because of excessive pressure it is practically ruined.

When Operating a Three Drum

Good judgment has an opportunity to be frequently exercised by the operator, if he is operating a three drum sander. He can frequently manage to get along without using the first drum at all. For special fine work, where the veneer is thin and the wood cleans up easily, say in case of mahogany and red gum, the sanding can often be done without putting the work through the entire process, provided by the three drum sander machine.

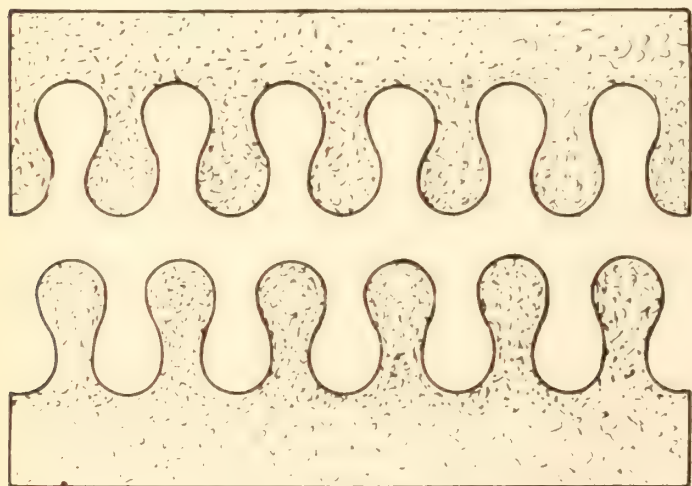
The work should not be run through the middle of the sander exclusively. The operator should be careful to run the work through his machine in such a way as to give all parts of the rolls an equal opportunity to work. Then the pressure is distributed evenly. This means that each cylinder of paper gives a full amount of service and that changes are not required as frequently as when only the middle portion of the drum is used.

A sander, to do good work, must have drums and rolls properly balanced and run at the right rate of speed. A short straight edge is very useful to test the drums, and when doing this the drum covering must be tight and of the same thickness from end to end so that the straightedge shows the exact position of drums. If they are found out of line this can be easily remedied by setting the adjusting screws until the desired results are obtained. If the drums are run too slow the sandpaper will wear out quickly and not cut as fast and smooth as if running at its proper speed. The manufacturer often receives the blame as regards his paper, when the fault lies in the slow speed of the machine. The proper speed is 1,200 r.p.m. for the first two drums, and 1,500 r.p.m. for the polishing drum.

This machine should not be used as a surfacer, the operator should not remove any more stock than is necessary; the first drum should be adjusted to do all the cutting, the second, to remove the scratches, and the third, to do nothing but the finishing. All gummy stock should be kept until the last.

The Belt Sander

Belt sanding machines, whether of the more common hand block type, or the more complicated power contact type, requires skill to get results. The faster the operator is in his movements the better the quality, as well as quantity, of work produced. This machine should be placed where there is abundance of light and by all means where it is dry and moderately warm. In some factories belt sanders are



Interlocking Joint Ready to Glue

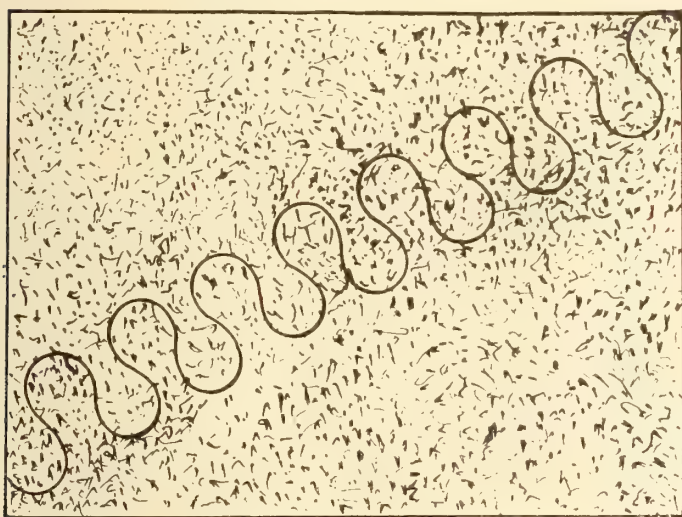
many excellent types of machines made, and the machine suited for purpose in hand should be procured. In addition, the operator, before beginning his work, should be given instructions as to the care and proper adjustment of his machine.

The operator should bear in mind that whatever errors he makes should be on the side of safety. It is better to exert too little pressure and clean the sur-

placed where it is almost impossible to get good results. It is impossible to get results where the electric light is practically burned all day or where this machine is not connected up with the fan to take away the dust. There are, even to-day, operators working under these conditions.

These machines almost invariably demand a fine grade of paper. Care should be exercised in making a sand belt as a poor joint leaves its mark, one every revolution, on the work being sanded. The interlocking is the best joint to use and is much better than the square lap joint. This joint fits together like a dovetail and is being reinforced by a thin piece of cloth glued on the back.

Nearly all manufacturers of garnet papers claim to have the best on the market. There is, however, a great difference in garnet belts; some of the backings are different and inferior, stretching so much that the garnet crumbles off. This is caused by the belt stretch-



Some prefer to splice at an angle

ing under strain and breaking loose where glued and shortens the life of the belt. Again some garnet paper is soft and does not have the cutting qualities that other paper has.

Scraping Machine as an Aid

The manufacturers who have a wood-scraping machine will get very good results by not passing their stock through the triple drum sander. The drums beat a certain amount of grit into the pores of the wood. This is hard on the belt, shortening its life and cutting qualities. To get a first-class job pass the stock through the scraper, sponge lightly with water as it comes out, let it dry, then forward to the belt sander. Use two grades of sand paper, first cutting down, then polishing, use good sharp belts, and do not have forms or pads too spongy. The advantage of sponging is twofold, lifting all indentations, if any, so they will be sanded down, and where a water stain is used the grain does not raise so badly. This, of course, makes less work in the finishing room and the work sands more easily.

The number of feet a sand belt should run per minute varies with the operating conditions, yet under similar average conditions one can be guided safely by what some have experienced. There are, however, some factors that should determine the speed of belts, the most important is that method of bringing

the belt in contact with the work to be done. Pressure devices are not all alike, and do not travel over the work in the same way. The kind of wood and also the grade of the paper, as well as the type of machine all go toward making a difference.

An expert sander man claims that with a 20-inch pulley, having a speed of 600 r.p.m. and running at the rate of 3,000 feet a minute, the polish is secured at the expense of both paper and quantity of work. If the speed is 500 r.p.m. the surface will not have less polish, the paper will not be abused and more work will be turned out. He considers that a belt running from 2,400 to 2,800 feet a minute on the average, and under average conditions, is running at the best speed.

The Selection of Suitable Paper

The selection and care of sandpaper does not receive nearly the attention that it deserves. Next to the machine itself sandpaper is a very important consideration to good sanding. There are several influences, however, that have a direct bearing on results obtained, and any one of these may modify the benefit of good paper. In principle there are the operator, the condition of stock sanded, prevention of scratches, and other marring marks through the oscillators, and the ability of the drums to carry the paper tightly, and the making of belts for the belt sanders.

Some factories place the selection of their sandpaper in the hands of the paper manufacturers, telling them for what purpose it is to be used, and on what machine. Different kinds of paper are used for drum, belt, and disc sanders. With these facts before them the manufacturers are able to supply the correct kind and grade of papers.

Sandpaper to wear well, whether used by machine or hand, should have a tough back, but not too hard. A very good way to test paper is to tear a piece. If it will tear straight without anything to guide it, it is not very good quality. The best of papers has the fibres running in every direction. This makes the paper strong and also makes tearing impossible without a guide. Again, if a paper is inclined to crack it is not of a durable kind.

Instead of piling away the sandpaper in some corner for storage, allowing dust and dirt to fill in and clog up the coating, and where the edges become cracked and broken, it is far better to shelve the rolls on conveniently placed rods where the paper cannot get damaged, and where each roll may be efficiently handled whenever necessary.

Cost More to Manufacture Chairs

At a recent meeting of the National Association of Chair Manufacturers held in New York the following summary was presented to the meeting. The factory reporting presented, costs in 1913 and 1918.

More in 1918 than in 1913.	
Increase in cost of materials purchased	.43 per cent
Increase in labor cost	.82 per cent
Increase in overhead cost	.87 per cent
Decrease in pieces produced	.35* per cent
Increase in value of output	.62 per cent

*Less in 1918 than in 1913.

Chair factories are maintaining wage scales and are endeavoring to hold organizations intact even at the cost of efficiency and profit. Replacement of present stocks of lumber indicates higher cost for such material.

How to Reduce Belt Troubles to a Minimum

The Fact Should be Remembered that Faulty Belting Means Idle Machinery—Even Good Belts Must be Used at Proper Tensions to Produce Maximum Amount of Work—How to Get This

By Lee Prior

Did you ever go into a factory and notice how many of the small things were neglected? Principally, I mean belts and belting. I think we all know that if the point of lap on a belt is toward the opposite way of travel, it will very seldom open up at all. Yet with this knowledge, we occasionally find the point of lap on the outside pointed in the direction of its travel even when the man in charge of belts claims to be thoroughly familiar with his duties.

If a machine stands idle during working hours while the belt is being repaired or tightened it produces nothing during that time, and there is a distinct loss of output. If it stands idle for one-half hour in 10 hours' working time there is a loss of 5 per cent in its output. This, however, is probably not so serious as the loss in output due in belts being run so loose that

off with a dull knife or an old file. When the belt is clean and dry, a dressing of neat's-foot oil is good, but must be applied with the utmost care as the oil has a tendency to release the glue in the laps and allow them to become separated.

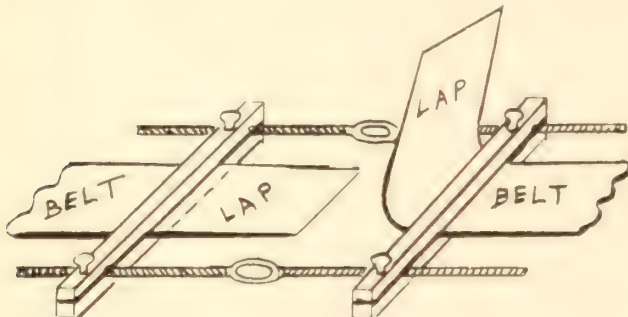
When a belt begins to slip, if it is properly tensioned, and if the pulley is of wood, then the size of the pulley must be increased to the required percentage to get good results. If the pulley be of cast iron it can be remedied very simply by drilling a few 1-8-inch holes through the face of the pulley, thereby, making an escape for the air. The belt will cling ever so much more tightly to the pulley, increasing the friction and helping to bear the load much better. Powdered rosin should be strictly avoided on a belt, yet we find lots of operators using this and also soap to make a belt pull.

Sometimes the manufacturers of electric motors send them out fitted with a pulley far too small. This necessitates too tight a belt, and a belt should never really be tight; it should be easy to get on and off, as the greatest power and best service are derived by being just slack enough not to slip. Over-straining a belt produces unnecessary wear on both belts and machinery and causes great loss of power by friction.

The best belt speed is usually figured at from 4,000 to 4,500 feet per minute. Also a light belt on a large pulley is preferable to a thick belt on a small pulley. Another mistake is to throw on belts while pulley are running at a high rate of speed. In the matter of tension, it is safe to cut belts 2 inches short in every 10 feet of measured length. In order to get the proper tension each time a belt is tightened, the figure illustrates a good method of obtaining this. It may not be thoroughly understood but it is well to try and familiarize oneself with the pressure per inch of the average belt. Three-ply belt should be about 47 pounds, 4-ply, 57 pounds; 5-ply, 63 pounds; 6-ply, 70 pounds.

It is pretty generally known that all new belts should be thoroughly stretched before ready to run, as they will quickly elongate under the pull of driving, and therefore cease to drive. A simple means of stretching a belt is as follows: Lay the belt flat on the floor, take two pieces of wood about one inch thick and nail the ends of the belt fast to the floor. The pieces of wood will give it added strength during the stretching process. Next stand astride the belt and pull the middle of it up from the floor. It will be surprising to note how much it will stretch by unaided muscular strength. Then force a piece of wood under the middle of the belt, so as to raise it from the floor. Having the belt forced up in the middle by the piece of wood, the next thing is to stand on it for a few minutes; it will then be found that a still larger piece of wood can be forced under. There need be no fear of breaking the belt, as the nails will give away first. It is best to leave the belt under the stretching process for 24 hours before joining together.

In choosing pulley, it is always well to select those that are slightly rounding on the top, or what is known as "crowning" in the trade, for a belt is always



CROSS SECTION
OF
CLAMPS.

Clamp for splicing belts

they cannot take the speeds, feeds, and depth of cut for which the machines were designed and that the tools will stand. Belts of the best quality must be used at the proper tension, to do the maximum amount of work. There are some belts abused from the beginning to the end of their short life. It may be that a machine is being crowded, or it may be that a saw is running dull, or the belt is slick with grease and dust. About the first thing that occurs to the operator is to cut a piece out of the belt and make it tighter. This is the most common of all abuses, a lack of regard for what is exactly the right tension. If they would take pains to keep the belts clean, and have the machines running at proper speed, they would give better satisfaction, and it is safe to say that they would last from 25 to 50 per cent longer. Dirty or greasy belts can be cleaned with a mixture of two parts of gasoline and one part of turpentine, then scrape the loosened dirt

inclined to run on the highest part, which in this case is the middle. Pulleys that have no crowns must have the axes of their shafts set perfectly parallel to each other, which is often difficult to do, and even then a belt will sometimes run on the edge instead of the middle of the pulley. In reference to increasing size of pulleys for better results, it is well to bear in mind that from 30 to 40 per cent is a good method for increasing the proportion.

For fastening round leather belts, used on small spindle machines, that is, belts of about $\frac{3}{8}$ -inch diameter, fastening made of $1\frac{1}{2}$ -inch wire nails answer the purpose very satisfactory. If this "home-made" fastener is put in properly, a very powerful drive will be obtained. There is sometimes difficulty experienced by operators of carving machines in making a good fastening to the round belts. An easy way is to lay the belt on a flat surface and give the end a blow with a hammer, enough to flatten it. Then with a bradawl drive a hole through it, but not too close to the end, for the fasteners should be about $\frac{3}{4}$ -inch long and the holes should be set just enough to get the ends of the belt inside the hook. The ends of belt should be butted tightly together.

Another point is in reference to upward or downward pull of belts, especially does this apply to planers. As a rule these machines are belted from the direction which is most convenient. But it is always well for every superintendent to know at what points, and what directions the greatest strains come upon the planers, in order that conditions permitting, he may arrange to throw them on the more rigid parts.

There are some who claim that the downward pull of the knives, in cutting, more than counteracts the upward pull of the belt; and that to belt upward is the better way. But from another viewpoint, we find that there must always be some pull on the "slack" side of the belt, in order to maintain effective frictional contact, and as accidental strains must be taken into consideration, the rotational pull can be reckoned as a very small part of the whole. For instance, the beginning of the cut, which is always the hardest part, is downward, giving a sharp upward thrust to the head. If the knives are dull, this thrust is much accentuated, and if the pull of the belt is also upward, it renders the strain on the caps and cap bolts something enormous.

Under ordinary conditions the caps and cap bolts of any well made planer would probably stand indefinitely the strain of an upward trending belt; but ordinary conditions do not always prevail. It is perhaps true that the danger of the caps or cap bolts breaking is uncommon, but there is always present, the danger, that they may work loose, and, unless inflexible conditions demand that the machine be belted upward, such arrangement is certainly throwing a considerable strain in the direction in which the machine is weakest. Whatever the direction of the strain due to the normal cutting of the knives, there is certainly a severe upward strain; and that in the nature of a blow. If to this is added the pull of the belt it can certainly not do less than increase the tendency to strain the weakest part of the machine.—American Furniture Manufacturer.

Wise men lay up knowledge—in their minds; wiser men also keep it handy on the shelf.

If you are not interested in your work, you are a drudge no matter what your salary.

Ten Thousand Portable Houses

The Canadian Timber Products Association, consisting of a number of Canadian manufacturers, have been offered an order for ten thousand portable houses for France and Belgium. The order was made by the French Government to Mr. A. G. Rose, who represents the Association in France, and is of the value of about \$7,000,000.

Unfortunately, a difficulty has occurred in regard to providing transportation on account of the high rates asked by the steamship companies. This question has been discussed at meetings of the Association in Montreal. On working the cost out it was found that the prices asked for transportation were eight to ten times those of pre-war prices, and amounted to over \$2,000 per carload of the finished article.

The price named by the Association f.o.b. seaboard Canada was quite satisfactory to the French Government; the Association also added to this price what they thought was a reasonable quotation for the freight to make the price f.o.b. French ports. The Association calculated on freight rates of two and a half times those prevailing in pre-war days, which would allow the Canadian manufacturers to deliver in France at prices quoted to the French Government. It was recognized that it would be impossible to fill the order if the members of the Association had to accept the quotations of the transportation companies, which amounted to twice the cost of the house itself.

Energetic steps have therefore been taken to get the Canadian Government to provide transportation at reasonable prices. The acting Prime Minister and Minister of Marine have been approached with this end in view. Various boards of trade and the Ontario Provincial Government are taking the matter up with the Federal Government, and it is certainly to be hoped that they will be successful, so that this important order can be obtained by Canadian manufacturers, and that it will not go to Swedish or United States competitors.

An Export Association Formed

Taking advantage of the recently enacted Webb export trade law several American furniture manufacturers have organized for export under the name of the U. S. Equipment Export Association, and will handle desks, filing cases and office furniture.

This is a step that can profitably be followed by Canadian manufacturers. In going after the export trade there is no doubt that co-operation offers many advantages over individual effort. Not only does an organization carry more weight with the foreign buyer but orders can be secured in larger quantities and when secured can be handled more expeditiously and with greater profit than in any other way.

Standardization and co-operation seem to be the keys which unlock the doors to a large export trade.

Glue Co. Secures New Premises

The Kane Manufacturing Company has leased the premises at 1832 to 1842 S. Clark Street, Chicago, and will take possession May 1st. This new building consists of five stories and basement, and gives a floor space of 75,000 sq. ft. In making this change the Kane company will be enabled to double their output.

The Sanding of Box Stock for Printing

Eliminates Variation in Thickness Surface Takes Ink More Readily
Neater Work May Be Turned Out

By R. N. Y.

The printing of boxes has come to be recognized as an important feature in wooden box making; in fact, it has reached the point where it is absolutely a necessity, in the advertising of the product the box is to contain, from the crude or, rather, haphazard methods of the earlier printing. This has been elaborated on considerably; in fact, the more elaborate the printing becomes the more imperative the matter of dressing and finishing the stock preparatory for the box printer it becomes.

In this connection there are commonly two kinds of trouble encountered; one is the variation in thickness of the dressed stock, dressed on different days, or occurring through frequent changing over on other orders; the other is the variation of thickness from one edge of the stock to the other. Just the least variation in the board will show up a smudgy, nasty print, when neat printing is desired, and the harder the wood is that is being used the more aggravating this variation in thickness becomes.

Variation Due to Shrinkage

In regard to the first trouble encountered—viz., the variation in thickness of the stock, during different days, it must be said that the planer men are not always to be held to account for this condition. In the majority, if not all, of the box plants making printed boxes the stock is usually kiln dried, then resawed and planed, and right here is where the trouble for the printer comes in. It may happen, as it often does, that a lot of stock on a certain order is planed one day, while another batch will be planed the next day, and, while the planer man will solemnly swear that both lots were planed precisely to the same thickness, nevertheless, when the stock reaches the box printer he will complain that good printing is out of the question, as the variation in the thickness of the stock makes this impossible. The pressman may be justified in his complaint, and the planer man just as emphatically deny this charge of uneven thickness. Both undoubtedly are right in their contention. Well, where does the trouble complained of originate if the planer man has accurately dressed both lots to the same thickness?

Planer Man Not to Blame

The trouble is not the fault of either the planer or the printer man, but really the result of unforeseen circumstances arising from time to time in the daily routine of the work. That part of the order was planed several days ahead of the balance, and, having been kiln dried to a drier degree than the air, has absorbed the existing dampness of the atmosphere, causing it to swell thicker than it was really intended to be. On the other hand, to avoid needless change-overs the printer waits until he has the whole order before starting printing; thus it comes that he will get the stock that has been planed the same day and the planed stock of several days ago together. Of course the stock just planed has not been able to absorb enough of the moisture to swell to the same extent as the former; hence the variation is found in the thickness of stock by the pressman.

The other cause of variation in the thickness from

edge to edge, of course, depends on the proper adjustment of the planer knives, etc. But no matter how painstaking this is done there will always be some unevenness in this respect. What is the really logical solution of these ever-present annoyances and the cure for same? In reply the answer would be: run your stock through the drum sander just preparatory to going to printing press. Of course, I know some will say this is a needless and unwarranted expense. Be that as it may, however, one leading manufacturer who tried this out evidently does not think so; in fact, he cannot see how he was able to do good work in printing before he started sanding his stock.

Highly Finished Surface

The value of sanding the box material not only minimizes the trouble so often encountered in the variation of thickness, but also gives a better surface for printing. The surface of the stock coming from the planer is slick and glossy as a rule, and will not take ink as readily as a surface that has been sanded. In fact, the sanding of box material before printing is a long step toward obtaining efficiency from the printing press. It results in a neater and more artistic printing job, and will in the end handsomely repay in repeat orders and better prices for what little this extra effort will amount to in additional expense and labor.—Barrel and Box.

Box Co. Perpetuate Fraud

Mr. Justice McLennan, of Montreal, recently dismissed the action brought by the Hochelaga Bank against the Canadian Inspection and Testing Laboratories, Ltd., to recover \$46,647, which had been advanced to Lalonde, Ltd., of Montreal, on the strength of reports signed by an inspector in the employ of the defendant company.

The Lalonde Company had a contract with the Imperial Munitions Board and had assigned all monies due, or to become due to the bank and had authorized the Munitions Board to pay such money to the bank.

The defendant company (Canadian Inspector Laboratories Ltd.) were under contract with the Munitions Board to inspect all boxes manufactured by the Lalonde Co., and to make certified reports showing quantities and description of boxes shipped from day to day. An inspector acting for the defendants carelessly left some blank reports, duly signed and certified, with the Lalonde Co.

Under an arrangement made with the bank, as shipments were made the Lalonde Co. delivered to the bank the duly certified inspection reports purporting to show the quantities shipped together with invoices and shipping bill and the bank advanced money to cover said shipments.

During February, March and April, 1917, the Lalonde Co. obtained from the bank the sum of \$46,647.90 on the strength of documents duly signed showing shipments made. On their face these documents appeared to be genuine, but in reality were false invoices and shipping bills and the signed inspection blank, which had been fraudulently filled out by Armand

Lalonde. In addition to the above amount the bank had during the same time advanced other sums on legitimate shipments and were in due time reimbursed by the Board for these shipments.

In the meantime the Lalonde Co. had become insolvent and the assets were not sufficient to satisfy the claims of the creditors. Lalonde was tried and convicted in the criminal court for obtaining advances from the bank by false pretenses. The bank then sued the Inspection Co. on the principal that the defendants, as the employer of said inspector, were responsible for his negligence in signing the reports in blank and delivering same to the Lalonde Co.

In dismissing the bank's action the judge said in part, "Nagle, the inspector, was undoubtedly guilty of negligence. There was no contractual relation between Hagle and the bank. He was inspecting for the Imperial Munitions Board and had nothing to do with the bank, and neither Nagle nor the officers of the defendant knew at the time that the Lalonde Company was obtaining money from the bank in connection with the contract. Unless Nagle's negligence can be held to have been the proximate cause of the bank's loss, plaintiff cannot succeed."

The purpose of the certificate of the inspector was to enable the Lalonde Company to obtain payment from the Imperial Munitions Board for a shipment or consignment of boxes, and not to obtain an advance of money from the bank. The advances were made by plaintiff on genuine promissory notes signed by the Lalonde Company, which were accompanied by manufactured false invoices and forged shipping notices filled in by Lalonde, the latter bearing the genuine signature of defendant's inspector.

"Fraud and crime on the part of Armand Lalonde intervened between the negligence of the inspector, and the advances by the bank and these intervening fraudulent circumstances, in my opinion, prevent the preliminary negligence of Nagle from being proximate cause of what the bank did.

"In my opinion the bank has not made out the main issue in its action."

Turned Wooden Boxes

Among the wooden items which seem to have a good opening to come back through we may list turned wooden boxes. There was once a pretty big business in medicine and drug boxes turned out of wood, and though both metal and paper have cut into this extensively in the past, some of it has persisted right along, and the wooden box is about the most satisfactory of all. Attention to developing and enlarging this business right now should prove well worth while.

Drying Sand Belts

That sand belts and sand paper used on machines should be dry to get the best service out of them we are pretty well all agreed. Usual, too, when we think of such drying we associate it with dry kilns and high temperature. It is interesting to note in this connection a full page advertisement of a sand paper concern in the Saturday Evening Post in which they illustrate how they hang their flint paper up to cure quickly in cool air. It is the cool part that deserves attention, for possibly the drying of a sand belt or roll of paper in the heat of the kiln may cause harshness, cause it to fly. Active dry air something near the temperature in

which one is working is perhaps the best drying agent. But during damp, cool weather the question is, how is one to get rid of moisture without heat. It is a question which suggests room for a line of interesting experiments.

Localising Outbreaks of Fire

It will never be possible entirely to eliminate risk of accidental fire, but an outbreak can be prevented from spreading if the building be divided into sections by party walls, having openings protected by fireproof doors. A striking instance of the value of fire-doors was afforded by an outbreak that occurred lately at a large warehouse adjoining Bolton Station, on the Lancashire and Yorkshire Railway, used for storing cotton. This building consists of four storeys, comprising a loading platform on the ground floor and three upper storeys. The latter are divided into three sections by two party walls built up from the main girders over the loading way, these walls passing through the roof to a height of several feet. Three openings on each of the upper floors permit of railway trucks passing from one section to another, these openings being protected by double-armoured fire-doors of the automatic sliding type.

Examination after the fire had been subdued showed that all the fire-doors were uninjured, those on the far side of the party walls not even blackened by the smoke. It was due entirely to the presence of these doors that the outbreak was prevented from spreading to the remaining portions of the building, with its valuable contents, and thus increasing the damage three-fold.

The double-armoured fire-doors at the Bolton warehouse consist of several thicknesses of well-seasoned wood, tongued and grooved and secured by clinched nails. They are covered completely with sheets of tinned steel in such a manner that, while free to expand, they exclude all air and cannot become detached. By excluding the air from the wood combustion is retarded so effectually that exposure to flames for several hours results merely in the surface becoming carbonised. An attachment on the doors ensures that they close automatically upon an outbreak of fire, thus eliminating the human factor, that fails sometimes at the crucial moment.—Machine Woodworker.

E. C. Atkins Club Hold Banquet

The Pioneer Club of E. C. Atkins & Co., Saw Mfrs., held its annual banquet and smoker at the Spencer House in Indianapolis, Saturday evening, March 1st. The club was founded in 1906 by 62 employees who had been with the company 20 years or more. The organization now includes 152 members with periods of service ranging from 20 to 49 years.

All the officers of the company are members, also employees from every branch of the industry as well as salesmen in various parts of the country. The oldest living employee is Chas. F. Auman, who entered the service of the company in 1870 and is now filling an important position in the factory. He related many interesting occurrences of the days when the great Atkins organization was much smaller and much younger.

The evening's entertainment was arranged by the Advertising Department.

Sparks and Filings in the Saw Room

A Few Causes of Saws Cracking—Split Steel as a Contributing Factor—Poorly Shaped Gullets—Foresight Required by a Saw Filer

By Edgar Usher

(This is the first of a series of practical saw articles that will be of deep interest to all woodworkers. The author is a saw salesman with years of experience, and he will describe in detail the common troubles he encounters in the various plants he visits, their causes and the means by which they were successfully overcome.—The Editor).

So much has been said and written regarding the care of saws of all kinds, from large single and double cut band saws, band resaws, down to the humble but undoubtedly, and perhaps in practice it must be said inevitably, vastly more abused narrow band saws as used in furniture factories and woodworking plants. Also of the large circular saws as used in lumber manufacturing mills, both permanent and portable, solid tooth and inserted point, down to the small circulars used in planing mills. Also the most democratic of all the varieties perhaps, the hand saw, must not be forgotten, for it also plays an important part in the woodworking industry.

In view of this it is obviously impossible to cover in a short paragraph the difficulties so often confronting the travelling saw salesman, who is often met by an irate customer, with a full conviction of the justice of his case, who tells him that "Your saws are no good," and follows this up with a voluminous report of his saw troubles of recent date and a dreamy reminiscence of the good days he now regards as gone forever in which there were no such things as saw troubles and a saw was a saw day in and day out, year after year, and never gave any trouble.

Manufacturer is Often Blamed

Similar often also are the remarks of the factory manager. Each and all have their own peculiar greeting; some delicately courteous; some otherwise—often it may be said "otherwise." Others again greet the salesman representing the firm from whom "those bum saws" were bought in a noncommittal manner, and as often as not the principal will shift the responsibility of the cussing and sulphurous language onto the shoulders of the superintendent or filer by sending him into the mill.

What is all the trouble anyway, whether in saw-mill or factory? Whose is the trouble? The saw manufacturer's or the salesman's? The writer ventures to say that it is, at a conservative estimate, seventy-five per cent. of the time neither of theirs, except insofar as a saw manufacturer and his representative always try and make their customers' saw troubles their own problems. So, in perhaps twenty-five per cent. of the time the saw is at fault, but for the balance the trouble is usually found either in the mill or factory, its equipment or staff.

Somewhere, something or someone is in error, and it is the object of any articles which may from time to time appear under the above heading in these columns to point out from a salesman's actual experiences, and these, it may be said, are as numerous as sparks from an emery wheel, where the troubles start, how they are aggravated, how they may be located and remedied, or better still, avoided.

Unquestionably the most frequently met with complaint against saws in general and the one most

often laid by millmen in either circular or band mills, and even to a greater extent by band resaw operators, is cracks. These cracks are, in about ninety per cent. of the cases, found in the gullets of the saw teeth. If the aggregate value of all the saws unjustifiably replaced by saw manufacturers in Canada alone were computed, the sum total would probably be found to be surprising, to say the least. This is not to say that the saws are not in some cases at fault, for no manufacturer is more infalible than any other man, and a faulty saw will once in a while get past the rigid inspection to which all manufacturers subject their goods before shipping.

Split Steel a Cause of Trouble

But there are some things which are impossible of detection in the factory, one of which is "split steel." This defect is caused in the initial stage or when the steel is being mixed at the steel mill. The so-called split was originally, perhaps, a bubble in the crucible, and when rolled out from its ingot form into a plate the bubble becomes naturally elongated in the process and forms what is known as "split steel," causing the points of the teeth to open up and "crumble" on either side. Such a defect cannot be detected until the saw is put in operation, very often as the split may be found in any part of the plate, sometimes in the factory tooth even, but more often further in the plate, and may sometimes exist so far down, near to the arbor hole, or, in the case of a hand saw, so near the centre of the blade that it is never discovered.

Numerous Points to be Considered

But cracks are caused by different and various means, and the cause of cracks cannot possibly be enumerated for they are often caused by a purely local peculiarity in a particular mill. But some of the causes can be named amongst the most common, these being badly shaped teeth, too great an amount of tension put in unevenly, a choked emery wheel caused by non-use of the "rougher" or dresser, and adherence of gum to the face of the wheels of the mill. Case-hardening of the gullets is a common cause of this trouble and is caused often by the use of an improper emery or, as before stated, by non-use of the dresser. Too much speed, too much hammering, and the use of sharp faced hammers causing cuts in the plates, vibration in the mill, and wrongly adjusted guides, too little room in the gullets and too little hook to the teeth causing the face of the tooth to hammer the lumber instead of cutting it with a clean, chisel-like cut.

Too Heavy a Feed

This last fault, together with too great a feed, is also sometimes found to be the cause of a band resaw running back on the wheels and crowding against the back guides. When this happens the back of the saw is case-hardened and cracks appear in the back of the blade.

These are only some of the more common causes of cracked saws which can, by a little foresight, be overcome. Many filers have lost good jobs and good reputations as filers by the lack of a little care and foresight in such apparently small matters.

Woodworkers in the Federal House

Hon. Edgar H. Rhodes, Speaker of the House of Commons, while a barrister by profession, is closely identified with the lumber and wood working industries, being president of the Brooklyn Lumber Co., Limited, and a director of Amherst Pianos, Limited. He resides in Amherst, N.S., and was first elected a member of the Federal Parliament for Cumberland, in 1908, being returned at each subsequent contest. He was made Deputy Speaker of the House in January, 1916, and Speaker the following year. As one of the Canadian representatives at the Imperial Parliamentary Conference, in London, England, in 1916, he accompanied the members of that body on their visit to the munition plants, the fleet and to the front. Hon. Mr. Rhodes has always taken a deep interest in all patriotic movements and is a member of the Dominion Council of the St. John's Ambulance Association, as well as a member of the Dominion Executive, and of the Nova Scotia Executive of the Canadian Patriotic Fund. He is one of the youngest men who have ever graced the Speakership in any legislative body, being only forty-two years of age.

R. E. Truax, of Walkerton, Ont., who is a saw-mill owner and operator, and proprietor of the Walkerton Wholesale Sash and Door Factory. A councillor in Walkerton for some years he was later Mayor for two years after which he was a reeve for four years. In 1894 he was elected a member of the local Legislature and at the next general election he was returned by acclamation. In 1911 Mr. Truax was successful in capturing South Bruce for a seat in the Federal House. Born in Montreal, in 1847, he was educated in Walkerton, where he has spent the greater portion of his life, and enjoys a wide measure of confidence and respect.

There are thousands willing to do great things for one willing to do a small thing.—George MacDonald.

None of us realize the number of friends that we have lost by handing out advice.



R. E. Truax, M.P., South Bruce, Ont.



Hon. E. H. Rhodes, M.P., House of Commons

Ad-El-Ite Annual Sales Convention

The Adams-Elting Company, of Chicago, Toronto and New York, manufacturers of Ad-El-Ite paint and varnish products, held its annual convention at Chicago recently.

A little different order regarding the program was followed this year, the entire day being devoted to industrial finishes and problems affecting this class of trade.

A few appropriate remarks by William Porter Adams, president of the company, were followed by Howard Elting's spirited expression of means and methods for 1919. The number of industrial salesmen materially increased the last year, and all are looking forward to splendid business during 1919.

In the evening the annual dinner was given to the salesmen, heads of departments, men of the office force, etc., at the Chicago Athletic Association, with Howard Elting as toastmaster.

Regret was expressed by all that Philip Elting, the company's treasurer and general manager, through illness was unable to be present, it being the first convention he has missed in the company's history. Many a toast was proposed to his good health, and those assembled at the convention sent a large box of growing plants to his home.

All the men left full of enthusiasm and felt that from the convention each had gathered many helps for the ensuing year's work.

Wooden Water Tanks

The shortage of steel is turning strongly to wood for water tanks, and this should furnish opportunity for some of the jobbing planing mills of the country where work is slack because of the curtailment in building operations. Tanks in many cases come under the head of actual necessities, and the indications are that we will have quite a revival of wooden tank-making.

Furniture in the Occupied Territory

Interesting Description of Two Chairs Seen in Cologne—Variety of Designs Lacking—Furniture Tastily Displayed in Retail Stores

By Bomb. H. B. Beattie

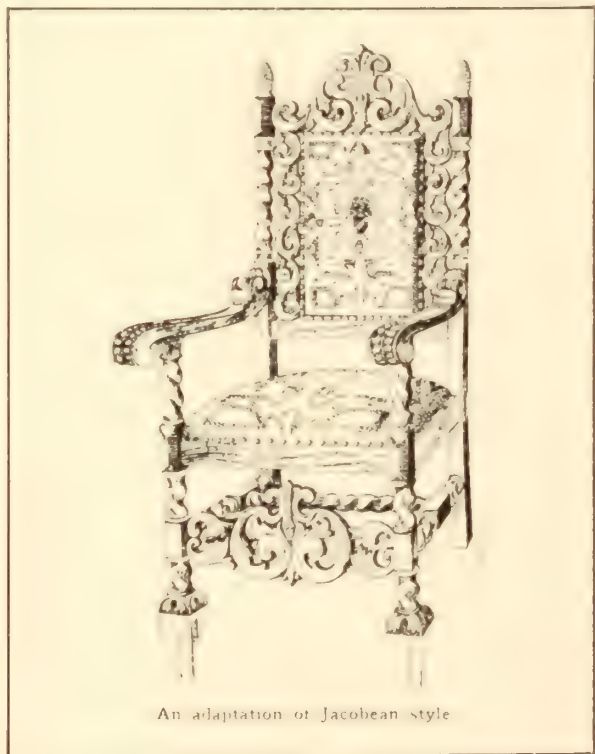
(The readers of the "Canadian Woodworker and Furniture Manufacturer" have been greatly interested in the sketches and descriptions of some of the pieces of beautiful furniture that Bomb. H. B. Beattie came across while serving with the Canadian Expeditionary Force in France. Bomb. Beattie is now with the Canadian army of occupation, with headquarters at Bonn, Germany, and he promises us some interesting descriptions of some of the furniture he sees while in Germany.

Mr. Beattie is a lover of beautiful furniture and is intensely interested in the practical end, manufacture and finishing, as well. No doubt the articles he is preparing will be eagerly looked forward to by all interested in the furniture business.—The Editor).

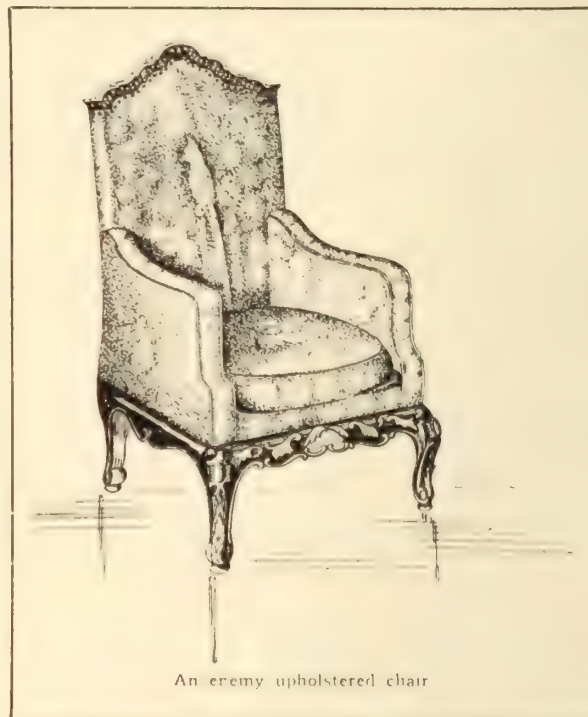
Retail men may be interested to know something of the way in which the people of "Boscheland" display their furniture. Not that I advocate the adoption of Hun methods, nor do I wish to be accused of hobnobbing with the enemy, but when I see the sign "FURNITURE" or the enemy equivalent, I naturally find out all I can. In this particular instance, I was up in Cologne and during the course of my wanderings I arrived in front of the "Leonard Tietz" Departmental store, on Hoke Strasse. This store I would say is a little over one half of the size of the Robert Simpson Co., of Toronto. Three of four of the large plate glass windows were given over to the display of

effect, tall lamps with colored silk shades, tea table cloths, etc., to match, lent the warmth of color necessary to make this window one of the most attractive I have seen for some time.

Upon entering this department on the ground floor, you find yourself in a long narrow room with odd pieces of furniture tastefully arranged and not at all over crowded. The "Styles" exhibited on the floor had



An adaptation of Jacobean style



An enemy upholstered chair

decided Jacobean tendencies, but yet they were not Jacobean altogether. They have a heavy massive style here all their own, which seems to be greatly in favor, judging by the stock carried. Further to the rear, on the ground floor, various rooms were completely furnished and were arranged very attractively, for the most part. The entire first floor of this department was also utilized in this manner. Living room, dining room, bed rooms and kitchens, all completely furnished. However, it grew rather monotonous owing to the predominance of the one design, the only variation being in size and weight.

A very good line of kitchen furniture was shown. Good substantial kitchen cabinets, constructed on much the same lines as our Canadian variety. These were varnished in the "white." Beyond this, varnish finish was conspicuous by its absence, with the exception of a few small mahogany in-laid tables and some ladies writing desks, in the same wood. These were trimmed with cast brass ornament, such as carving laid on the corners. Brass rail around top. Feet and legs liberally decorated in the same manner.

The accompanying sketch of the Jacobean arm chair was made at the store of "Leonard Tietz," while the upholstered chair comes from a competitive establishment on the opposite side of the Cathedral.

the better class furniture, that is to say none of the "Bread and Butter" variety was visible.

What first arrested my attention was the fine clear glass which reflected no baffling "high lights" so common in our windows. Couldn't quite see how it was managed, unless the plate glass was slightly concave. However, this is a matter beyond me.

The "pieces" were, to my eye, well arranged to show to the best advantage and to aid the general

Stratford Conciliation Board

The Board that was appointed to settle the differences between the Stratford furniture manufacturers and their employees recently held meetings at Kitchener, Hanover and Montreal. The board consisted of Judge McGibbon, Brampton, chairman; Joseph Orr, Stratford, representing the furniture manufacturers, and J. F. Marsh, Niagara Falls, acted for the men.

The spirit which animated these meetings was admirable. Judge McGibbon stated that in his varied experiences he had not had occasion to take part in such amiable meetings as those held, and complimented the manufacturers on their disposition and determination to do what was right.

Resolutions were passed by both manufacturers and employers, which tended toward a settlement of the issues before the board.

The employees are asking for fifty cents an hour and a nine-hour day. In presenting their case Mr. Marsh informed the manufacturers that it was to their interest that their men should be contented and this could only be secured by paying a living wage.

The Board is expected to bring down a report some time this month.

A Progressive Woodworker

One of the progressive and rapidly expanding woodworking plants situated near Toronto is that of Wm. E. S. Savage at Mimico.

In August, 1916, Mr. Savage opened a planing mill and lumber yard on the lake shore road between Mimico and New Toronto. Previous to engaging in business for himself he was with the firm of Geo. Rathbone, Ltd., for 13 years and 2 years at the Soo.

It was not long before he found that he had located in the right spot. The various factories in the neighborhood require woodwork all the time and their employers are fast moving out to this district. At present there are no empty houses to be had in either New

Toronto or Mimico so there is every inducement for home building.

Mr. Savage states that located as he is in the heart of what is bound to be one of Toronto's most industrious suburbs, he finds his business increasing all the time. In November last he was obliged to instal five new machines in order to manufacture window sashes. With this new addition he now possesses a well equipped planing mill and sash factory and is enabled to supply the wants of his many customers.

A new lumber shed has just been erected, which together with other well arranged buildings makes his plant complete in every detail. He pays particular attention to his lumber yard and all his stock is carefully and systematically arranged.

His motto is "System and Service" and equipped and located as he is the prospects for the future are very alluring.

A Growing Handle Business

Joseph and Charles E. Lewis, commenced business in St. Thomas, under the name of the Elgin Handle Co. In January, 1915. Both men had had years of experience in the manufacture of handles and success attended their efforts. Recently, finding their quarters too small, they moved to the factories vacated by John Heard and Co., St. Thomas. When they are settled in their new premises they will have a convenient and well equipped plant. The new location is on the London and Port Stanley Railroad and the building includes a frame factory, a brick factory and saw mill, two warehouses and a large drying shed.

For their handles they use only Canadian second growth timber and find it heavier and tougher than the Southern lumber. The handles require hickory, white oak, white ash and rock elm.

The bolt or timber is first sawn into blanks of the required sizes and these blanks or billets are then piled away in the drying sheds until thoroughly seasoned. When dry they are sawn to a rough size before turning, thus reducing the work of the lathes.

The handles are turned to the correct size and shape and are then sanded on coarse endless belts and finished with a finer belt. They are then finished by waxing and packed and created ready for shipping.

The line at present consists of axe, pick, sledge hammer, cant hook, jack handles, etc. With the saw mill their line will be increased by the addition of fork, hoe, and shovel handles. As the new plant is fitted with steam boxes and dry kilns they will be in a position to furnish shafts, poles, hockey sticks, plow and cultivator handles in the near future.

To Open a London Office

W. A. Elliot, of the Elliot Woodworking Co., Toronto, leaves shortly on a trip to England and possibly France and Belgium. He will open an office in London.

Business has been exceptionally good, Mr. Elliot reports, more machines having been sold in February than in any other previous month. A new gasoline driven machine, which does the work of the Famous No. 5, has been placed on the market. Patents have been applied for both in Canada and United States.

There are lots of men who would rather steal a poor living than earn a good one.



Wm. E. S. Savage, Mimico, Ont.

The Care and Operation of Band Rip Saws

A Thorough Study of Running Conditions and a Thorough Knowledge of Saws
Are Prime Requisites--Good Tools Essential

By S. V. H.

After years of experience in the care and operation of band rip saws, the following ideas are not merely theoretical but have been worked out in actual practice and have stood the test of time. It is manifestly impossible to give hard and fast rules that will cover all the vexatious troubles that may be encountered.

The quality of the saws, and the conditions under which they are used, vary greatly. There is a great difference of opinion among filers with regard to the proper tension, spacing and shape of teeth, amount of throat-room, amount of hook, method of swaging, shaping and other details. Where we disagree it remains for each to diagnose the case according to his own knowledge and then give the treatment that he thinks his saws require. Care, attention to details and the study of cause and effect must characterize every successful saw man.

For the Filing Room

For the proper fitting of band rip and resaw blades a well lighted and well ventilated room and good tools are prime requisites. In purchasing tools for the saw fitting room only the best should be accepted; poor tools are expensive articles in themselves, not taking into consideration the time wasted trying to make them hold together long enough to finish their operations.

The usual equipment consists of an automatic saw grinder, a bench about ten feet long and equipped with a levelling block, a saw anvil, rolls and shears with a set of rollers about two feet apart on the floor and a rack overhead with rollers similarly spaced to facilitate the easy and quick handling of the saw blades. At the end of the bench there should be a drop table about two feet long and fitted with two or three rollers to hold the saw blades while the inside of the blade is being levelled. Then there should be a back gauge, about four feet long, a light straight edge, and tension gauge combined of a suitable length for width of the blade. A cross and long faced hammer, about two pounds, a round faced hammer of about the same weight, together with a suitable swage and shaper about complete the equipment.

A Variety of Swages

There are a great many different makes of swages and no doubt each filer has his own preference, but give me the "white" every time. They are easy and quick to handle and give the best results. Other tools that will be found handy are a tooth indicator for the perfect alignment of the teeth and a moon shaped punch for use in preventing cracks from deepening and a standard wire gauge to enable the exact width of the swage to be determined.

The blade should be examined as it comes off the mill and any tight or loose spots and any long or cross face lumps that are found should be taken out. By going over the saws frequently there is not as much work to be done at any one time, the saws cut better and there is not as much tendency to crack. If any cracks are found the moon shaped punch should be used at the extreme end of the crack and with the con-

cave side toward the teeth, hammer lightly until the mark is a little more than half way through the blade. Now put the saw on the over-head brackets and with a flat file file away the abrasion caused by the punch. Next carefully level around the crack and if the crack is a very deep one, remove all tension from the blade for about three inches each side of the crack, leaving the blade perfectly flat.

Back of Blade Crowned

The back gauge should now be used over the entire length of the blade. Here again I may differ from the usual practice for I run my saws with a crown in the back of one thirty-second of an inch in five feet. To keep this uniform I use the rolls. After the back is properly crowned I go over the blade for tensions using a gauge ground to fit the segment of a fifty foot circle.

In tensioning it is best to roll from the centre, taking care not to put too much pressure on the rolls, or the saw may be dishd, and not going closer than one half inch to the edge. By doing this a good tire line is obtained. Some claim that three quarters of an inch gives the best tire line, but I find that a half inch is best for the saws (four inch) I use.

Grinding an Important Operation

After being put in good shape the blades are next taken to the grinders. This is a very important operation. The length of time that a blade will cut without being changed depends on the feed of the mill and the manner in which the saw was ground. In grinding the emery wheel is a very important factor. A coarse stone will not leave a fine cutting edge, while a fine wheel will glaze and burn the tooth. I use an eight inch, concave, round faced corundum wheel and get satisfactory results.

The amount of hook a saw should have is a much disputed question. Here again one must bow to the conditions. On a mill where the saw runs 7,000 feet per minute, carries a feed of 125 feet per minute and handles every variety and thickness of stock I carry a one and one half inch hook, on a four inch blade, points spaced one and one quarter inches apart and a nice round gullet seven-sixteenths deep.

Use a Gauge for Swaging

When swaging I carry a six gauge swage on a nineteen gauge saw. In swaging I swage to twelve gauges, then shape back to thirteen gauges. After swaging it is best to grind to a nice keen cutting edge and afterwards use the tooth indicator and have all the teeth in perfect alignment. If these instructions have been followed carefully the result will be a blade that will run for fifteen hours in hardwood.

Care must be taken in placing the blade on the wheels. The saw and the rolls must be in perfect alignment and the saw should when running project, out over the edge of the wheel, the depth of the teeth. When operating the sawyer should be instructed to look carefully over the blade at least twice a day. This will tend to prevent accidents.

A Mill Scale Study of Oak

The government Forest Products Laboratory at Madison, Wis., has completed the data of a mill scale study of white and red oak at the mill of George C. Brown & Co., Proctor, Ark. The study was made in 1915 by David G. White, and the information procured is especially appropriate now in view of the importance of wood in the war. The figures are three years old, but that is an advantage rather than a drawback, because they deal with normal price and usual times, and not with operations carried on under extraordinary conditions due to war, says the Hardwood Record.

The study included white oak and red oak; the white oak consisting of 160 logs of overcup and cow oak, the red oak of 133 logs of southern red and Spanish. These logs were sawed into lumber of the following dimensions: 91 per cent was 1, 1¼, and 1½ inch lumber; 4½ per cent was 2 and 3 inch stock; and 4½ per cent of cross ties and small timbers.

The lumber was graded according to the rules of both the National Hardwood Lumber Association and the Hardwood Manufacturers' Association. The same lumber was inspected twice, the second time after three months of air seasoning but two inspections were compared, and the results form part of the report. The first inspection was made on the sorting chains at the mill, the second when the piles were taken down.

The first inspection by the Hardwood Manufacturers' rules gave a total of 110,995 feet; by the National Hardwood Lumber Association, 111,247 feet. The second inspection which was of the air-dry lumber, gave 107,709 feet by the Manufacturers' rules, and 106,973 feet by the National.

The study was planned with the expectation that it would show a number of things relating to the production and care of lumber, among such being the grades and the proportion of each and their origin in logs of different kinds; the cost of stumpage, logging, manufacturing, yarding, and general; the losses due to seasoning, and other causes; changes in value during seasoning; waste due to milling and other causes.

The report by Mr. White presents tables and diagrams which gives details as well as totals of all the topics which are worked out; but in the space which can be here given to this review it is not practicable to quote the tables, but an outline of the principal results is shown.

Summary of Conclusions

The prices used in the discussion and conclusions follow:

White oak—	Plain	Quarter sawed
Firsts and seconds	\$45	\$68
No. 1 common	22	36
No. 2 common	12	20
No. 3 common	6	6
No. 4 common	4	4
Red oak—		
First and seconds	46	58
No. 1 common	22	35
No. 2 common	12	20
No. 3 common	6	6
No. 4 common	4	4

Stumpage value of \$5 per 1000, Doyle scale was placed on both white and red oak.

Logging cost was \$6.01, consisting of \$4.50 for delivering logs to the railroad and \$1.51 for delivery at the mill yard.

Manufacturing cost per 1,000 net lumber tally varies with the sizes of logs, but showing an average of \$1.70.

Yarding cost from the mill to the piles and then from the piles to f.o.b. cars, \$1.49.

General costs, consisting of taxes, depreciation, advertising, insurance, rent and several other items, \$2.64.

Financial expenses, consisting of interest and discount, \$0.65.

The losses in footage during seasoning has been figured out on the percentage basis, and the calculations are complicated, due to the fact that account is taken of green lumber, that which is temporarily air-dry, and the final air-dry; and also to the fact that two rules of inspection are considered. The percentages run differently for white oak and red oak, the former loss running from 1.6 per cent. to 3.3; the red oak loss running from 2.8 to 9 per cent. Changes in value during seasoning were not all loss. In some instances a decided increase was shown. Most of the depreciation in the value of white oak appeared in the lumber cut from defective logs.

The waste in manufacturing logs into lumber, not including shrinkage in seasoning and the edging and trimming after seasoning, averaged for white oak logs 41.7 per cent., and for the red oak 29.9 per cent.

Percentage of Grades

The percentage of grades for both white and red oak logs, under the inspection of the two associations were as follows:

	H.M.A.	N.H.L.A.
Firsts and seconds	20.9	17.9
No. 1 common	46.9	46.5
No. 2 common	13	16.9
No. 3 common	17.1	18.7
No. 4 common	2.1	....

The footage loss in seasoning, between the green and the temporary dry condition, due to shrinkage and degrading below a recognized grade, was as follows in per cent., according to the grading by the two associations:

Red oak	2.8	4.7
White oak	1.6	2.5

The footage loss in seasoning between the green and final dry conditions was:

	H.M.A.	N.H.L.A.
Red oak	3.4	5.7
White oak	2.4	3.3

The oak study for the year 1915 shows that the profit per hour for the final air-dry condition was more than for the temporary air-dry condition for all classes of logs, according to inspection rules of both associations.

For all classes of logs, the profit per hour for the lumber inspected, both green and dry, was greater under the rules of the Hardwood Manufacturers' Association than under the National Hardwood Lumber

Association, except from the lumber inspected green from the sound red oak butt logs. In that case the difference was very small and was due to the larger amount of firsts and seconds recorded by the National inspector for this one class of logs when inspecting the lumber in the green condition.

The profits per hour for the temporary air-dry condition was less than for the lumber inspected green for all classes of logs, according to the rules of both hardwood associations, except where plain sawed sound oak logs were considered by the National inspector. In this case the inspector recorded a very small per cent, more of No. 2 common and better for the temporary air-dry condition than for the green, which reversed the amount of profit per hour for the temporary air-dry and green condition.

In the majority of cases, for the different classes of logs, the profit per hour was more for the lumber in the first air-dry condition than in the green. This shows the wisdom of maintaining a yard resaw and trimmer, since the profit should be less in every case for the final air-dry condition than for the green, if the edging and trimming have been perfect in the mill and if the same selling prices are used in computing the profits per hour.

The profit per thousand was greater for the white than for the red oak, because of the higher price of quartered material. The profit per hour, however, was greater for the red oak, because of the increased rate of production in plain sawing.

The milling waste for all white and red oak logs was 35.8 per cent. The waste was 46.7 per cent. and 29.9 per cent. for white and red oak respectively.

Operation and Care of Jointers

By R. W. L.

The jointer, or buzz planer as it is often called, is a very useful tool so a few words about its care and operation should not go amiss.

In the hands of a skillful operator an endless variety of work can be turned out on this machine. By bolting cutters to the head grooving and shaping of many kinds can readily be performed and owing to the ease and quickness with which it may be set up, it can be used to advantage for small jobs.

If you have a few panels you want to shape try attaching a couple of moulding knives you have a panel raiser. Perhaps you wish to mould a few seats for pews or benches and do not want to set up the sticker; the buzz planer offers a solution. Through the use of special forms intricate work of various kinds may be readily performed.

It was not so much the special work as the plain ordinary jointing and straightening I had in mind when I started this article. But first let us consider the adjustments that may have to be made. To look at the machine, it does not appear very intricate, and it is not. There are a few simple points that must be watched and upon the amount of attention given to these depend the quality and to a certain extent the quantity of the work produced.

The first item is that of the knives. They must at all times be kept sharp and free from gaps. Simple isn't it? Yet it is impossible to turn out accurate work with dull knives. So watch your knives carefully and when they show the least sign of being dull stop and whet them. It may appear as if this is an unnecessary waste of time, but it will more than re-

pay in quality and increased quantity of work turned out. Stock can be fed at a faster rate when the knives are keen.

The adjustment of the knives is another important point. They must at all times be parallel to the back bed. Where the knives are jointed this automatically takes care of itself, but where the knives are set and sharpened by the old method this point must be given special attention. It is out of the question to do accurate work unless the knives are in proper adjustment.

Then the tables must be parallel. Trouble is seldom experienced from this cause, for as a rule the tables are designed and carried so that they cannot get out of line with each other unless the whole bed of the machine is twisted. Some machines have a tilting attachment for hollow jointing. Where this is found a little more attention must be given to the lining up of the two tables.

Now we have a jointer with sharp knives set parallel with the back bed, with the two tables in line and when we set the back table the same height as the knives the machine is ready to produce.

My theory has always been that with sharp knives and all adjustments properly made the less the operator does the better. That may sound odd, but what I mean is this, that a properly adjusted machine will turn out perfect work if the stock is merely pushed over the cutters, but if this operator attempts to bear on certain corners or in any way try to guide the stock and assist the jointer the quality of the work suffers. When truing up stock such as door styles and other work running from six to eight feet long better work is accomplished by working a few feet ahead of the cutters and merely shoving the work along. The machine itself will take care of all the warps and twists. The operator should strive to maintain a steady, even feed and he will secure satisfactory results.

If the back bed in low hollow work will result and the end of the stock will be dubbed as it leaves the forward table, if a trifle high the work will rise and it will be found difficult to complete a cut, besides there will be a rock to a piece jointed under these conditions.

A caution to all. Beware of the knives, they bite. It is always advisable to use a guard whenever it is provided. When you are working without a guard never relax your vigilance for a second, for that is sufficient time for something to happen. It is usually in the unguarded moments that the accident occurs.

It is in a way unfortunate that 36 inch dowels are as standard as they are, being comparable to a barrel of flour in the past. But as fractional parts of a barrel of flour may now be obtained in sacks, so the dowel dealers should endeavor to create a demand for short lengths, which in most cases are just desirable for cutting to the sizes used.

The whims of fashion seem to favor the woodturners this season. Many who have automatic lathes are making millions of round and oval beads which are used for necklaces and doubtless are sometimes sold as of some marvelous new substance, whereas they have a simple coat of enamel or celluloid finish.

The world stands aside to let anyone pass who knows where he is going.

Upholstering and Trimming

The Upholstering of a Chesterfield

A Sound Frame, Good Material and Careful Workmanship are Prime Requisites—Reputation of Maker Depends on Lasting Qualities of the Product

By N. Wellwood

The upholstering department is one of the most important departments in a furniture factory and should be given corresponding attention. It should be located in a light, well ventilated part of the building and should at all times be kept warm and comfortable. Two other prime requisites are good materials and skilled interested workmen.

To do creditable work the frame or foundation must be good. It must be well doweled and blocked and absolutely free from dosy wood. If the wood is not sound the tacks are bound to work loose and come out, thus allowing the covering to loosen and spoiling the piece. A good many people think that because the frame is all covered it does not matter what grade of lumber is put in it, the same applies to filling. I have found that the best is the cheapest in the end.

In the upholstering of a Chesterfield the first operation is webbing for seat. The webbing used must be a good, strong grade and should be closely woven together, one over the other and must not be more than half an inch apart. In some shops it is the practice to keep the webbing two and three inches apart, so that each spring will have for its support one web running each way. This is a big mistake as webbing is the main part of a Chesterfield. Take an old piece of upholstered furniture for example and you will find that it is all sagged and half the webbs broken or pulled off. This is because it did not have sufficient strength in the webbing when it was made.

Number of Springs Required

The seat of a Chesterfield is roughly say six feet long by thirty-two inches wide and should contain at

least thirty-six springs. One must use his own judgment and be governed largely by the grade of couch that is being made. A twelve inch spring is the most suitable and to give the best results should be tied to stand about ten inches high. It is best to tie a spring of this height in the centre, so as to keep the spring working straight all the time. The springs should be well cross-tied, about eight knots to each, by knots is meant real knots not just winding the twine around as is so often done. It is a great mistake not to tie each knot securely for if the twine should break it will allow the whole row to loosen and spoil the work.

Tie Each Spring Separately

The edge wire is tied on next. A separate piece of twine is used for each spring and should be tied tightly. It is not good practice to use a piece for every five or six springs and only one knot. After the edge wire is firmly secured the burlap is put on.

When tacking the burlap it must not be pulled too tight but should be left quite loose. Loose enough to allow for the amount that will be taken up when stitching it to the springs. If not left slack it is liable to tear from the frame.

If a cushion seat is being made very little material will be required for the first stuffing, as the seat must be kept flat. Use a thin layer of moss and stitch a good edge on it, a cheap grade of burlap will do for this, using three stitches to each spring, some only use two. Stitch the moss down good to each spring and then cover with a good layer of cotton batting, sufficient to make it smooth and deep enough so that



A Chesterfield by Snyder Bros. Upholstering Co., Limited, Waterloo Ont.

the stitches cannot be felt. Now cover it with a good grade of denim and it is now ready for the cushions.

Hair a Satisfactory Filling

The best filling for cushions is curled hair on cotton batting, down also makes a good filling. Kapok or floss, as it is more commonly called, does not make such a satisfactory filling. It will be found where floss is used after a year or two of service, the filling is ground into a white powder. Curled hair as a filling is hard to equal and cannot be surpassed.

Softer Springs for the Back

When upholstering the back it is not necessary to use a good grade of webbing as is required for the seat. It is advisable to use a piece of burlap before tacking on the web. Put on sufficient web to give it strength, say about two or three inches apart, and tack securely. The springs can now be sewn on. A good soft spring gives the most satisfactory results. The springs should not be tied down too tight or all the spring will be taken out of them. They should be knotted the same as the seat.

After the springs are covered with burlap a good grade of moss may be used for a first filling. It should be well bridled so that there will not be any possibility of the filling shifting or dropping. Then a good layer of hair or cotton batting is put on and covered with a piece of cotton. The covering is then put on the back.

The ends and back are now lined and the bottom is also lined with a dark cotton and after a few deft touches we have a finished Chesterfield. One that will be a credit to the upholster and which will give years of service.

Compressed Air in the Furniture Factory

During the last few years, since wages have been going up and finishers have been becoming scarcer, most up-to-date factories have put in sprayers in the finishing room, also rubbing machines which are run by compressed air. Now, when a firm goes to the expense of putting in an air compressor and tank, the outfit may as well be made to do more than simply supply the finishing room. In our factory we have put it to use in the machine shop as well.

We run a 1/4-in. pipeline from the compressor to our band saw, and use it as a blower for brazing saws. It gives so much stronger flame than the ordinary blower that we also use it for tempering all shaper knives. We also have a pipeline to our three-drum sander and a 30-ft. hose attached to it, which we use for blowing the dust off the machine. Formerly it took a man from 1/4 to 1/2-hr. to clean up the sander with a duster; now he can do it easily in five minutes and do it much better, as it cleans out all the corners. The hose connection to the pipe is just in front of a window, so we use the same hose outside, to inflate the tires of our autos.—"The Woodworker," Indianapolis.

Patent Suits

It is reported that the Perkins Glue Company have brought suit in the United States District Court in Grand Rapids, Mich., against the West Michigan Furniture Company of Holland, Michigan, George P. Hummer of Grand Rapids and the firm of Hood and Wright of Big Rapids. The suits are for infringement of the Perkins vegetable glue patent. The Perkins Company has also brought a similar suit in the Dis-

trict Court at Frankfort, Ky., against the Carrollton Furniture Manufacturing Company, and Henry Schuerman of Carrollton, Ky. The Perkins Company claim that the defendants have infringed their patent by mixing up and using vegetable glue in glueing together veneered stock for furniture.

Finishing Materials Market

Dry Color.

No change of prices of any nature, either in large or small dealings, has been noted. The color producers are very optimistic about the outlook. Cost of production has not declined and therefore prices remain firm at first hands.

Turpentine.

Little demand for turpentine has left the prices as quoted in our last issue. There has been little interest shown by domestic consumers for some time. Prices range from 70 to 75 cents, according to quantity and location.

A peculiarity of the turpentine market is the fact that when prices go too high the consumer resorts to turpentine substitutes.

Varnish Gums.

There is a very quiet demand for varnish gums just now. The government restrictions on importations have been removed and this may have an effect on prices later on. Just at the present time prices hold rather well, considering the situation, and some dealers are asking as high as 31 c. to 32 c. for Batavia damar, and as high as 14c. to 15c. for Congo sorts. However, there seems no reason for quoting any advances over the prices as published.

Waxes.

Like all other supplies, no changes have occurred. The markets where one would expect some activity, report no sales of consequence. Every one, however, claims prices will remain at the same levels, with no downward tendency. In fact, some large houses frankly state prices must be maintained to protect dealers.

Drying Willow for Artificial Limbs

The Forest Products Laboratory at Madison, Wis., has been co-operating for some months with the Surgeon General's office in Washington in investigative work in connection with the rapid drying of willow for artificial limbs. Heretofore it has taken from three to five years to season willow for this use and yet no satisfactory substitute for this wood has been found. It was urgent to discover that some means of rapid artificial drying. Through its tests the Laboratory has succeeded in properly drying the willow in from sixty to seventy days. To prepare the material so as to minimize the drying period is one of the problems that been determined in order to accomplish the seasoning idity and circulation conditions in the dry kiln have been determined in order to accomplish the seasoning and drying in the quickest possible time.

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A Study on Stains

Different Raw Materials Required—Processes Used in Manufacture—Some Hints
on Dyes and and Lacquers—Bleached and Orange Shellacs

By Dixy Wells

The proper understanding of stains is very important. There are many kinds on the markets with various degrees of strength, producing varied results, and yet each may be good for a certain purpose.

There are many kinds of stains, lacquers, wood finishes, etc., in all of which are aniline dyes. By mixing these dyes with certain varnishes and other vehicles, a great variety of finishing materials can easily be produced. For instance, various proportions of two shades of certain mahogany stains may be so manipulated as to produce almost any desired shade.

As many of these dyes are received, they are ready, through a certain treatment, to render them fit by mixing with pigments. This process bringing them into a chemical condition where they are readily susceptible to any of the several vehicles with solvent properties, which are in common use today, solvents such, as benzene, alcohol, linseed oil and water.

Solubles for Different Pigments

Many pigments as they come from the manufacturer are specifically prepared and are only soluble for instance in oils, others in waters, still another lot in alcohol. Fat blacks, reds and yellows are soluble in oil, also fat scarlet, orange, ceretene, brown, spirit blue, spirit black, etc.

The popular brown walnut stain, bismarck brown, etc., and many of the mahogany stains come soluble in water. You will find that the aniline or coal tar colors are the coloring base of spirit stains, oil stains and most lacquers.

The great problem in the manufacture of stains and the ultimate end is to accurately reproduce a finish on wood that will be identical with the natural color of those woods, or in some cases to change the finish of a cheaper wood, to imitate the more expensive, when used in furniture and general cabinet making and so skillful are some workmen that they can reproduce wood effects so accurately that it is hard for the layman to detect, for instance, the imitation mahogany from the genuine. The stains are followed by a coat of shellac or varnish, present a very creditable imitation, and still at a cost that will meet the pocket book of the most economical buyers.

When using stains, especially those which are long in oil, care must be taken that ample time is given for the stains to thoroughly soak into the surface of the wood. A good stain must not lay on top, but must penetrate far below the surface, and sufficient time must lapse for thorough drying before using the varnish or shellac coat which generally follows. "Bleeding" and "streaking" is often due to the fact that the stain has not been given sufficient time to dry before applying the top coat, for you see some colors are very

soluble and long drying time is absolutely essential.

Some might be interested in a point or two regarding the manufacturing process through which oil and spirit soluble stains pass. They are usually made in steam jacketed kettles. A certain amount of colors are weighed out, placed in the kettles and the heat turned on. After the contents of the kettle has been reduced to a liquid, a certain amount of vehicle is poured in so as to keep the mass in solution when transferred to the receptacles. The combination is watched carefully, and when all "beads" have vanished the batch is ready for the further use of a thinner and the whole removed to a large tank while still hot. After transferring to the containing tank, whatever thinners the formula calls for are added.

The most generally used solvent is benzol, but petroleum naphtha and a few gallons of asphaltum varnish are what are generally used in the vehicle portion. Considerable time must be allowed for proper settling, say from twelve to twenty-four hours. A longer period is not usually necessary, for if the batch has been properly cooked everything is thoroughly dissolved.

Spirit and oil stains are also made by a heating process, and this class of stains are classified according to the amount of non-volatile thinners which are used therein. A very good grade of mahogany stain can be produced as follows: 4 lb. fat ceretene, 16 gallons substitute turpentine, 21 gallons benzol, 6 gallons black asphaltum, and a good golden oak stain is produced with 10 lb. of fat yellow, 22 lb. fat orange, 22 gallons benzol, 24 gallons substitute turpentine, 6 gallons black asphaltum.

Of course this makes quite a quantity, but a lesser amount can be made by proportionately decreasing the ingredients, but this will give you an idea of the proportion of the various contents, and a variation in color is of course secured by the manipulation of the dye, while the solvent vehicle should remain about the same, and to this ingredient is due the proper working of the stain.

Of course wood stains can be made without the use of aniline coloring matter, but they at best, amount to not much more than a very poor or weak colored varnish which has probably an asphaltum base and is long in petroleum naphtha. They do, however, for certain grades of cheap work and offer an inexpensive imitation, but you will find them slow drying and lacking in the strong penetrating power which you will find in the higher class stains.

The spirit stains and lacquer branch of finish includes stains which are soluble in water, with the assistance of certain alcohols. Nigrosine, Scarlet R. R. and Eosine are dyes which find their greatest use in

dry colors, which are used in the manufacture of lakes. The first two mentioned are soluble in hot water, with the addition of alcohol. The Nigrosine dissolves in hot water, but requires more alcohol. They should be used only on the bare wood, and have a tendency to raise the grain, but must, of course, be rubbed down to a smooth surface before the application of the shellac or varnish coat.

Lacquers after all, are really but a varnish stain, which have as their component parts varying amounts of transparent coloring pigments. Lacquers are, however, in a class by themselves, and include varnish gums, gums which may be cut with alcohol, naphtha or turpentine. There is another group—gun cotton lacquers which name identifies the presence of gun cotton.

Anyone of the aniline colors or a combination of them which are soluble may be satisfactorily used as a basis for coloring spirit lacquer or varnishes. Some of the dry colors, however, for instance green, yellow, red, lakes and Prussian blue, may be used successfully in varnish lacquers.

If you wish to secure a good blue lacquer, for instance, simply use Prussian or ultramarine blue which has been ground in varnish or japan. Then this with sufficient gum varnish to bind the colors thoroughly after the thinners have evaporated. After this the mixture is ready to be thinned with turpentine or petroleum naphtha to whatever consistency is required.

Here is a simple formula for making a straight spirit lacquer. This can be made by properly dissolving aniline red, orange or yellow, and a little varnish oil, and adding benzol, alcohol or acetone as a thinner. Silver and gold lacquers have marked hiding or covering powers which other lacquers do not possess, and in making a good bronze lacquer just enough varnish should be added to make a thick paste of the pigment and the turpentine, or some other appropriate solvent should be added to make a thick paste of the pigment brushing, and following this process the little metallic particles retain their lustre unimpaired, which is not the case where materials are used which have a certain reaction on the metal powder and cause discoloration.

An Insect Produces Shellac

In the far eastern countries there are certain trees, whose small twigs when bitten by a certain insect produce a substance which we come to call shellac. The female insect who inflicts this bite brings about a certain resinous sap, which after a certain process is put on the market as shellac.

There are two kinds in common use, the orange and the bleached. The former is very pale in color, bordering on a yellow, and is transparent. The bleached shellac is almost white, a state which it reaches by passing chlorine gas into the alkaline solution of the orange shellac. Common wood or denatured alcohol is used to cut the shellacs, which are after all a sort of a spirit varnish.

Different Woods and Their Treatment

The Finishing of Oak and Mahogany—Different Methods Employed—Preparation and Application of Stains and Fillers

By Jas. Culverwell

There are many kinds of woods but few of these are what is known as domestic woods. It is the domestic woods of which I wish to draw to your notice. The king of wood is the oak. There are three kinds known as domestic oaks. Although there are about forty different species of oak grown in this country.

The three I refer to are white oak (*Quercus rubra*), rock or red oak (*Quercus prinus*), black oak (*Quercus tendrora*).

There are no woods that can be treated in such various ways as the oak. The best of these are the white and black oaks. The red being of a more troublesome nature to effect as good a stain and finish as the two previously mentioned.

The fumigating of oak is recognized to be the best and most pleasing treatment.

To fumigate oak, a room or enclosure of some kind must be erected and made air tight by pasting paper on any open joints; there must be a window and a door. The article to be fumed must be placed and distributed about the room so that no portion overlaps or touches another, otherwise it would prevent the action of the ammonia fumes from reaching the parts covered. When properly arranged the ammonia is then placed into a saucer in liquid form, strength 880, the door of the enclosure is then closed and sealed on the outside by pasting paper round the cracks. It is a good plan to leave an odd piece of oak in the room as a test piece. It takes anything from ten hours to 30 hours, according to amount of ammonia and color required. The depth of color can be found either by wetting the sample piece with the finger or touching it with shellac, or an oily rag will bring out the color. Should it not be dark enough close and seal up again

and let remain until such time you think fit to test again; this knowledge is gained only by experience. The advantage of fumigating is that a shaving or two can be taken off and not affect its color. Another is that it does not fade and does not raise the grain.

The nearest approach to box fuming or fuming by the gases from ammonia is to coat the article over with liquid ammonia two or three times, according to depth of color required; allow each coat to dry before applying the next. While this gives to the wood a very pleasing color, it is not as rich as the first named process, the advantage being time. The use of ammonia can only be effective when the wood is perfectly clear and free from any hand marks or glue. The parts so damaged, although almost imperceptible, will not allow the ammonia's action, whether it be fumes or liquid form.

Weathered Oak Finish

Weathered oak can be obtained by the following stains. Give the woodwork one coat of strong ammonia; allow this to dry, then paper down, as this will raise the grain. Re-stain with yellow ochre and lamp black, add $\frac{1}{2}$ lb. or silica to about 1 quart of stain. After applying allow it to stand a few minutes and then wipe off with a rag or cheese cloth. When dry give one coat of a good shellac (pure grain shellac); allow to harden up, when it can then be sanded down smooth and waxed or varnished and rubbed according to the finish required.

A browner cast or shade can be obtained by adding a little bichromate of potash to the ammonia.

Opinions differ in reference to antique oak. That is, in giving oak the antique or aged appearance. In



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the early stages of ageing the oak, the face or finished side was exposed to the steam of boiling ammonia. This, of course, could not be applied to large pieces, such as stair stringings or panelling of any size. The result was that liquid ammonia was used. Others claim that the only way to age oak is to apply a coating of strong vinegar in which rusty nails or filings have been allowed to steep, the strength of the stain being according to the amount of filings and the time allowed to stand before using. If not dark enough after the first application allow to dry, rub down and apply a second coating, repeating until the desired depth of color is obtained.

A very good and quicker method is to darken the filler with a mixture of Vandyke Brown and charcoal in equal parts. Bichromate of potash dissolved in water and applied with a brush will also give very good results.

Golden oak is not obtained by the filler alone, the wood must first be stained as follows: a mixture is made of Japan gold size and asphaltum varnish in equal parts and thinned out with turpentine to the required consistency. This has the advantage of not raising the grain. The filler which is applied when dry is made up as follows: Add to equal parts, turpentine, raw linseed oil and Japan gold size, enough sifted silica to make a stiff paste, color with vandyke brown, burnt umber, and if desired, a touch of lamp black (oil colors). There are prepared fillers sold to-day that do away with the trouble of making one's own. The color of a light filler can be changed to a darker filler by adding the colors required to obtain the different woods as Flemish, verde, weathered and others. Not as a stain but as a filler to match the stains.

When Using Wax or Pumice

There are many ways of finishing oak, but for antique furniture I know of no better finish than wax. Let the grain be left open or filled, it leaves the beauty of the wood open to view and does not clog it up in the same way that varnish does. Resin and Venice turpentine are sometimes added to harden the wax but if the wax is made up from pure wax, shreaded up and steeped in pure turpentine until dissolved, there will be no need to add anything further. Another finish for oak is, after staining and filling, to coat with thin shellac, allow to harden, and rub down. Then give from two to five coats of rubbing varnish, according to the quality of work required; let stand for a week if possible and then rub down with oil and 0.0 pumice stone (ground) and if desired, rub down with rotten stone.

There remains much to be said about the filling, fillers how made and applied, stains and how made, and finishing, but space will not admit in this issue as I wish to touch upon other woods and their stains.

Fuming or Staining Mahogany

Mahogany when properly treated is one of our most beautiful woods. There are many species, as Spanish (Svietened), (Mahagoni, Haiti), Mahagoni, Jamaika), Havanna, Mahagoni). Mahogany is invariably stained or fumed. Fuming is the same process as that which is used for oak. Ammonia fumes in an airtight box or room is undoubtedly the best for many reasons; one is it does not fade out as many stains do, especially mahogany stains. Imitation of old mahogany can be obtained by working over the wood with a weak solution of lime water. Another process is to first coat with a mixture of two parts of turpentine and

one of oil (linseed). Wipe off clean, when dry give a coating of bichromate of potash.

The oiling of mahogany before applying the bichromate give to the wood a much richer color than applying the bichromate to the bare wood and not oiling. When dry give thin coating of shellac, rub down and varnish with two or three coats of a good rubbing varnish. Let stand as long as convenient; longer in reason the better, then rub down either in ground pumice stone and water or oil, according to finish required. If an extra good job is to be done varnish again and felt down with pumice stone and oil, after which it can be rubbed with rotten stone and water or oil. There is also a method of polishing with the hand.

If the work is to be French polished after staining, a little Bismark brown added to the polish or a brown aniline dye, enriches the tone of the color, although this is not always advisable and when used should be used very sparingly.

Mahogany, being of a fine and shorter grain than oak, does not require the same amount of filling. The filler should be stained with burnt sienna. Mahogany, as oak, can be treated in many ways, both in stains and finishes.

The Application of Finishes

Of almost as much interest as the new offerings and the general progress in the finishes is the subject of their use, the manner of applying them. We have been making progress in this work for some years now, and while the hand-brush method is still with us, and probably always will be, new ideas have come to help out with the quantity jobs.

The most conspicuous of the new ideas calling for attention on the part of the trade is that of the spray method. Spray finishing has played a leading roll for some years now, and while the first enthusiasm has passed, and some who have been led to expect too much have found themselves disappointed, the spray seems to have made good and established itself permanently.

Meantime an older idea than the spray, which in the earlier days was limited to certain special lines in its use, is that of dipping. Dipping has attained enough prominence in the cabinet world that some varnish manufacturers now turn out a special finish for dipping, just as they do for the spray. The growing practice of coating the inner parts of cabinet work as well as the outer surface is favorable to the progress of dipping where the desire is to use the same material inside as outside for the body coats. Where it is desired to use cheaper finish for the interior it makes for some complications, and so it goes.

Finishing has always been a somewhat tedious job calling for lots of hand labor. This is what makes the room and the call for introducing labor-saving devices and methods. And while many different ideas and devices may rise in favor, and then decline or be overshadowed for a time by others, and while a big amount of brush work and hand labor will always be involved, we are steadily moving forward in the work of applying finishes, and we will keep moving forward. The goal of the movement is, less labor and a shorter time for the work of finishing, keeping in mind always the quality of the finish, which should go forward, too.—“Veneers,” Indianapolis, Ind.

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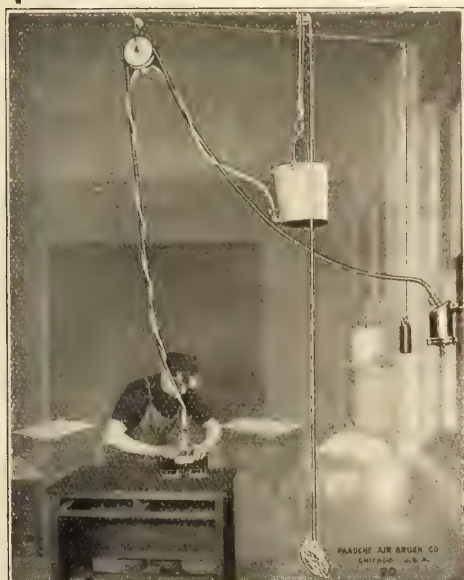
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50 Pcs. Pl. Oak, 1, Side	60 x 30 x 3 8	8 Pcs. Qt. Oak, 1, Side, & Pl. Oak	72 x 24 x 3 8
56 Pcs. Pl. Oak, 2, Sides	60 x 30 x 3 8	Back	72 x 24 x 3 8
58 Pcs. Pl. Oak, 1, Side	72 x 24 x 3 8	6 Pcs. Qt. Oak, 1, Side & Pl. Oak	60 x 30 x 3 8
86 Pcs. Pl. Oak, 2 Sides	72 x 24 x 3 8	Back	60 x 30 x 3 8
22 Pcs. Birch 1, Side	60 x 30 x 3 8	4 Pcs. Walnut, 1, Side	60 x 30 x 3 8

3 ply, $\frac{1}{4}$ " Thick

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50 Pcs. Qt. Oak, 1, Side	60 x 30 x 1 4	50 Pcs. Mahogany, 1 Side	60 x 30 x 1 4
1 Pcs. Qt. Oak, 1, Side	68 x 24 x 1 4	37 Pcs. Mahogany, 1 Side	72 x 24 x 1 4
3 Pcs. Qt. Oak, 1, Side	70 x 24 x 1 4	12 Pcs. Mahogany, 1 Side	70 x 22 x 1 4
3 Pcs. Qt. Oak, 1, Side	60 x 24 x 1 4	8 Pcs. Mahogany, 1 Side	60 x 24 x 1 4
50 Pcs. Pl. Oak, 1, Side	72 x 24 x 1 4	4 Pcs. Mahogany, 1 Side	54 x 24 x 1 4
50 Pcs. Pl. Oak, 1, Side	60 x 30 x 1 4	3 Pcs. Mahogany, 1, Side	72 x 20 x 1 4
1 Pcs. Pl. Oak, 1, Side	70 x 24 x 1 4	1 Pcs. Mahogany, 1, Side	60 x 29 x 1 4
62 Pcs. Birch 1, Side	60 x 30 x 1 4	4 Pcs. Mahogany, 1, Side	72 x 12 x 1 4

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Greater Efficiency in the Veneer Room

Co-operation Between Departments—Stock Cut to Best Advantage—Temperature of Room and Material—Working Wrinkled Stock

By S. H. Johnstone

Hard work alone seldom makes a man successful. It takes a combination of hard work, study and lots of deep thinking, coupled with a fair amount of persistency, to enable the average man to reach the top of his calling. The same rules apply to the work itself, and nowhere is it better illustrated than in the veneer room.

The veneer room foreman must use his brains, every bit of them, and work them hard. He not only has a number of vexatious problems of his own to overcome,—there seem to be new ones every day—but to make his department really efficient he must look ahead to the machine room and back to the cutting room and work to lessen the labor at both ends. When he does this he may, if he has time, congratulate himself a little bit.

Co-operation Between Departments

There are many economies that can be practiced when all the departments are working together and trying to save each other all they can. True, many of these economies are small, but minutes count, and in these arduous times we cannot afford to lose even a minute. In getting out a quantity of small stock, such as go to make up the swings for a bureau or dressing table there is ample opportunity afforded for all hands to work together. If the man who is cutting the veneer will use his head and instead of sending in a lot of two-inch strips to be glued up will cut all his strips double width there will be a considerable saving in time. The glue room operator will be able to lay them up faster. There will be less liability of loss from spoiled work or slippage. The workmen prefer to lay the wider strips so probably will feel inclined to take greater pains. Last, but not least, there will be a large saving effected in the time ordinarily taken to match the stock, as all the rails and stiles will lie in pairs. When they go to the machine shop if the sawyer rips them from one edge there will be a slight saving in sawing for he would have more cuts to make if each strip had been cut separately.

Say the stiles were two and one-half inches wide, to double that and allow half an inch for cutting and slipping would make each piece five and one-half inches wide. This size handles easier and a nice press full can readily be worked up. If when laying a good joint does not happen to be made it does not matter as that will be eliminated when cutting to the finished size.

This method may be applied to different kinds of work. When veneering crotch drawer fronts the case front may be made in 2 pieces and drawer fronts ripped to width after gluing. This saves time and trouble especially with the matching of the veneers. There is

also a slight saving due to the elimination of a certain amount of breakage. This applies particularly to cross veneers. The wider the piece the less liability of breaking.

Temperature is Important

The temperature of the room, stock and glue are very important items. In a lot of veneer rooms the temperature that the glue is kept at is altogether too high. After a series of experiments and a study of the results obtained, it has been found that the best work is done when the glue is kept at a temperature of from 125 degs. to 140 degs. A good many glue men will take exception to this and say that 160 degs. is the most satisfactory heat to work glue at; in fact that good results cannot be obtained if the glue is any colder than that. However, the statement stands. The glue should be between 125 degs and 140 degs. and the stock at about 100 degs. and the glue room about 70 degs. When the stock is kept hot it absorbs the moisture content of the glue more readily and when the face veneer is applied there is less dampness left for it to take up so the swelling and ultimate shrinking and checking of the face veneer is lessened. While a good many glue rooms are kept much hotter than 70 degs., yet at a higher temperature the workmen are not quite as efficient and as more heat does not increase the quality of the product or lessen the amount of spoiled work, it is advisable to maintain a comfortable temperature. As cold glue and cauls are the source of a lot of trouble the temperatures must be maintained for satisfactory results.

Straightening Wrinkled Veneers

Often a batch of wrinkled veneers are encountered and have to be straightened before laying. The most efficient method is to use the hollow plate redrier. This gives fine results. When properly handled the veneer comes out as smooth and flat as a piece of cardboard and is perfectly dry and ready for laying. Sometimes when the quantity is small or where efficient apparatus has not been provided, the old method of dampening the veneer and placing it between hot cauls is resorted to. This gives good results and is used in many shops at the present time.

As heat tends to make the wood pliable it is not advisable to attempt to straighten the veneer when cold. When the stock is not heated a lot of trouble is encountered through the veneers splitting and cracking. There are many modern redriers and dry presses that may be used and in all cases the results are fairly satisfactory.

Every piece of material that enters into built-up stock must be thoroughly dry. This point is often

touched on but too much stress cannot be laid on it. Be positive that everything is dry. Don't guess; know. Allow plenty of time for the material to dry, then test it to make sure it has dried. As many of the defects caused by improperly dried veneer do not show up until after the finished article has left the factory, a lot of avoidable expense and dissatisfaction often occurs. Greater efficiency demands dry stock.

Sometimes, not often, face veneers are laid with the grain running in the same direction as the grain in the core. This is fatal, and should be avoided at all costs. The core will expand with the moisture and will carry the thin veneer with it and hundreds of fine checks will result. Make it a steadfast rule to always cross the grain of the core with grain of the face. This is a small thing, but small things count big in veneer work.

Get the Work-together Spirit

Co-operation between the veneer and cutting room will effect a saving when large five-ply panels are being built. Where there is a large assortment of sizes in stock it will eliminate a lot of trimming if the proper sized stock is used. If the panels are to be 40 x 60 with the grain of the face veneer running length ways the core could be built up as follows: 2 pieces of rotary cut stock 40 in. x 60 in. and one piece 60 in. x 40 in., this will make a panel with the grain running crosswise on the two outside pieces of stock. After this core has dried thoroughly the face veneer may be glued on and the result is a fine five-ply panel. No crossbanding was used and practically the same amount of glue was required as if the old way had been followed. When using this method always make sure that the core is glued so that the grain of the outside pieces will run opposite to the way you wish that of the face veneer to run.

This method is preferable in most cases to the use of the solid core. The cost of material in each case and the little additional labor which is required to glue up the core is more than offset by the time saved in the preparation of the solid core. The lumber must be jointed and glued and planed and sized and then the result is an inferior panel. Then again, when using the solid core with thin face veneers, particular attention must be given to the preparation of the stock as any imperfections, no matter how slight, would invariably show through the face of the finished panel. Sanding with coarse, sharp paper is advisable when thin face stock is used.

It is always advisable to stick a wooden caul board between every ten or twelve panels. This will tend to equalize any variations that might be in the stock and will result in a better product. While this is the day of production, yet production without quality is not a solid foundation for business building. The ideal combination and the motto for every glue room should be "greatest quantity and highest quality."

Keeping Veneer Panels from Warping

By Expert

Some factories experience considerable trouble with warped veneer panels. They do not seem to be able to keep them straight. Here are a few simple suggestions, which if followed will go a long way toward eliminating this trouble.

When troubled in this way one of the first things to examine is the core stock. For five-ply panels it should be made up of sound, narrow strips, say about three inches wide. The cross banding can be of any

width that is handy. Careful experiments have determined that in a panel where narrow pieces were used for the core that the tendency to warp was largely overcome.

Best to Dry Before Facing

After the panels have been glued it is advisable to pile them away and allow them to dry for about three weeks before attempting to glue the face veneers on. The piling should be done carefully and all strips should be placed exactly in line with each other, otherwise the panels will not dry true.

The toothing of the stock is a much disputed point, so will not be dwelt on here any more than to say that it seems to be common practice to either tooth the panels or run them through the rotary sander, using sharp coarse paper for this purpose.

Glue Both Sides Quickly

When facing it is always advisable after gluing one side to immediately reverse the panel and glue the other. This tends to equalize the pull on both sides. If only one side was glued the moist glue has a tendency to pull, and unless there is a counter pull on the other side to counteract this the panels are sure to go. So always make a point of gluing both sides as quickly as possible. After gluing allow sufficient time for the glue to chill before laying on the face veneers. If this method is followed the trouble from warping will almost disappear, and the finished stock will come out true and straight.

Carefull Attention to Piling

After the panels leave the press they must be dried again. As before great pains must be taken with the piling. Strips of a uniform thickness should be used. Careful piling is the one essential operation that is most commonly overlooked. When this is not done properly straight panels cannot be expected. There is no rule or secret about it, neither is it a matter of luck, but simply a combination of common sense and careful attention to small details.

Drying Glued Up Veneer

By Foreman

The vapor process is now recognized as the best method of drying lumber although there appears to be many and varied ways of doing it. So we are being schooled in the proper humidity, circulation and temperature to accomplish the desired results, namely: lumber that is reduced to the minimum as regards shrinkage and swelling under different atmospheric conditions.

Now when vapor process drying of lumber works so satisfactorily, why not apply the same principle to the drying of laid veneers? Of course you cannot turn on the spray to the same extent, nor raise the temperature to such a high degree, but a little humidity helps wonderfully.

The patent dryers for the drying of laid veneers are undoubtedly good, but they are expensive to install and not always absolutely necessary. Some time ago, I was sent to one of our cities to ascertain the general method of drying laid veneers, and of five factories I visited, not one had a proper drying process and all were more or less dissatisfied with their results. In one place they dried their stock in the workshop, piled flatwise from the floor up with strips about three-quarter inch between, a very slow and uncertain

process, and were using the stock after about seven to ten days drying.

Another factory were also drying their stock in workshop, laid in racks on their edge overhead so one could walk under them. The racks were made with strips just so one piece would go in each place. The trouble here was the stock did not dry straight as the stock in the finishing room indicated. Other firms said they were patiently waiting and watching the patent process method, before making any change, but were not satisfied with their present results. I fancy there is nothing so annoying in a woodworking factory as when the finisher runs up against some stock that has not been properly dried, and the worst of it is he does not know for certain whether the stock is dry or not, until his troubles begin. The stock may look dry to all appearances and be fairly true and straight, yet not be thoroughly dry.

The only sure way is for the veneer or cabinet boss to dry it out before working it up in this way. Weigh one or two pieces every morning on a set of scales and continue to do so until the difference in the weight is not perceptible from day to day, the same as testing out lumber. Then you are absolutely sure the stock is dry and the results will justify the trouble. In conclusion let me say that a separate drying room with a temperature of about one hundred and ten degrees Fahrenheit and a circulation properly controlled so that the air will be changed at least once every hour, with a humidity of about 35-rational will give splendid results. Drying the stock quick and straight and will eliminate seventy-five per cent. of the finisher's troubles.

The Taping of Veneer

Should a veneer joint be glued? The question is one that is often asked and there has been much discussion over this moot point. At the best it seems to be a very unnecessary operation and one that causes a certain amount of trouble at times. When the edges of the veneer are jointed properly, taping is all that is necessary and will hold both pieces together.

When the joints are glued there is always the possibility of a block joint being made, particularly if the glue used was at all thick. As this poor point does not show up until the surface has been cleaned and sanded, in addition to a fine clean surface being spoiled a lot of time has been thrown away as well.

When the old practice of tacking veneer is used, one piece of veneer is tacked firmly in place and then another piece is matched with the first one and then held close and tacked there. The tape is then glued on and rubbed down with a hammer or suitable tool. However, the taping machine has supersided this method so that today the two pieces of veneer are put into the machine at the same time, the taper draws the pieces firmly together forming a tight joint and automatically feeds and glues the tape at the same time. This not only insures a better job but enables the operator to tape considerably more stock than by any other method.

One objection to tacking veneer is that the tacks leave unsightly holes. This can be overcome if the following method is used. Joint a piece of veneer and glue the tape along one edge allowing half the width of the tape to project. Turn this piece over and lay the second piece on the other half of the tape. By holding these pieces together the tacks are eliminated.

Working Birdseye Veneer

By R. H. H.

The matter of loss and gain through scrap veneer among the veneer users hinges on how it is looked after and cared for. Lots of waste scrap is waste simply because it has been neglected and left lying about carelessly till it has become dirty or has been walked on and split. Left-overs and trimmings are not scrap till made so through treatment. They are surplus stock, and if so considered and carefully piled away and protected they will often come in handy when some new stock is wanted. Some of it can be sorted as to size as it is being stored away, thus saving time when it is needed and serving as a reminder of the possible sizes available. Veneer values have reached the point where a distinct saving can be affected by taking better care and making more use of stock that in the past has been thrown aside as scrap.

Cut to Show Best Figure

Birdseye figure is naturally associated with maple, though somewhat similar figure may be found in other woods. At its best it is a product of rotary cutting. By this method of cutting the figure shows up best, and the most face wood is secured from a given amount of timber having the figure. Figured logs frequently have surface indications on the bark as a guide to their selection but it takes actual cutting into the wood to determine the exact nature and quality of the figure in a given log.

Usually the face veneer is cut fairly thin, but whether it is or not knives must be kept sharp to ensure smooth cutting. Good smooth cutting of figured maple is not so easy as of plain stock, which is not hard to cut with the veneer machine, and because of the nature of the wood readily cuts smoothly and evenly. Any figured maple, however, presents a different problem because of difference in hardness and in the run of the grain in the figured parts. So while plain maple is easy cutting, birdseye calls for skill and close attention to technical details to get the right results.

Some Advocate Reversing Stock

When making face veneer we are told by some experts that were the cutting equally smooth on each side it would be best to turn the stock inside out, because the figured part runs smaller as we get into the log, and by turning the larger side in it will hold better—will lessen the danger of the eye part coming loose and falling out. This probably depends on just where a given sheet comes in the stretch of the figured part. It is likely that some would work best with the right side out and some with the reverse side out, if only the holding of the figure part of the wood intact were involved. But there are other things to consider, one of which is that the outer surface of a sheet of rotary-cut veneer is tighter and will finish off better than the other side.

The main thing in using birdseye face veneer is to handle and use it with skill and care to preserve the figure intact. Careful handling will prevent breakage and damage, and careful gluing will ensure holding the figure part tight as well as the main body of veneer. It should be remembered that the figure part of such wood not only presents the grain differently, but it is harder, less porous, consequently will not take on and hold glue so readily as plain wood.—Machine Woodworker.

Veneers Will Check

The checking of veneer is one of the most persistent troubles that haunt the veneer room foreman. In spite of all one can do it at times occurs even in the best regulated glue room where up-to-date methods are used and every precaution taken to ensure good results. While checking may occur on any kind of face veneer owing to the peculiar grain fancy in figured and crotch veneers, it is more often found where the most expensive grades have been used.

All stock should be carefully inspected for ruptured veneers. This is one of the prime causes of checking. Some go as far as to use a strong magnifying glass for this purpose. When one is having a lot of trouble with stock checking it is advisable to pay particular attention to this point.

A certain portion of rotary cut veneer is slightly ruptured on the right side and badly ruptured on the other side. So when the stock is badly ruptured on the reverse side it should be examined carefully to make sure that the injury does not run right through. If the face stock is checked before it is laid it can be readily seen that no matter what precautions are taken that the checking, in this particular instance, cannot be prevented. Every precaution should be taken that the stock is laid with the right side up, for all rotary cut veneer is more or less rupture on one side.

The next point is to make sure that the material is dry. If it is not, it is bound to dry and shrink through time. The shrinking is evidenced by the cracks or checks that appear. There are different methods of drying. Where large quantities of veneers are used it will pay to instal a special veneer drier. These machines will handle an immense quantity of stock and give good results. A small quantity may be thoroughly dried in a warm room or between hot softwood cauls. Softwood is preferable because it will absorb a large amount of moisture. In either case it is advisable to pay strict attention to the storing of all veneer stock. Never pile veneers where there is the slightest possibility of dampness occurring.

Stock that is once dry should be kept dry until put under pressure. Unless this is done all our efforts will have been expended in vain. It is always advisable to spread the glue on the core in preference to the veneer. The glue should be allowed to chill slightly, until it becomes quite tacky, before laying the veneer. One reason for allowing the glue to set for a few minutes before laying is that this allows the core to absorb a certain amount of moisture that would otherwise have been taken up by the face veneer. As soon as the veneer has been placed the whole should be gotten under pressure. The quicker the better for this tends to prevent swelling.

After leaving the press the stock should be carefully piled and allowed to dry before finishing. Care should be taken to ensure even piling and thus prevent a certain amount of warp.

It is only through using the best stock obtainable and carefully watching all operations that this trouble can be conquered.

Maple trees are to be planted on the graves of Canadian soldiers fallen in France and Belgium. For this purpose seedlings have been raised at the Royal Botanic Garden, London, England, from seeds sent overseas by the Dominion horticulturist, Ottawa.

Improvements in Plywood Manufacture

To find a material for air and sea planes which shall be strong, light in weight, non-shrinkable and resistive to splitting, has resulted in marked improvements in the manufacture of plywood. The strength of most woods when pulled parallel to the grain is several times that of mild steel, weight for weight, but wood is relatively weak across the grain and is susceptible to high shrinkage in this direction.

Plywood is made of several sheets of thin wood or veneer glued together so that the grain of any one sheet crosses that of both adjacent sheets. As many as 27 or more sheets may be glued together to form a piece of plywood an inch thick. Such material has satisfactory strength in all directions, shrinks or expands little with changing moisture, has high resistance to splitting and is easily worked. It is therefore very satisfactory for airplane stock.

Thousands of tests have been made in the past few months at Forest Products Laboratory in Madison, Wis., to secure exact data as to the mechanical and physical properties of plywood and as a result its use promises to be much extended.

The wing ribs used by the Bureau of Aircraft Production is one of the types of machine developed by the Forest Service. These ribs are thirty per cent lighter than those formerly used and twice as strong. The laboratory has also shown the possibility of using many species of woods for plywood heretofore considered unsuitable for airplane manufacture.

As may be seen, the glue is a very important part in the making of plywood but tests have resulted in the manufacture of a glue that is so water-resistant that plywood may be soaked in water for ten days or boiled for one day without showing any signs of separation into its individual layers and without materially lessening its strength. There are tremendous possibilities for the use of this wood in furniture, trunks, door panels, wagons and other peace uses as well as in aircraft.

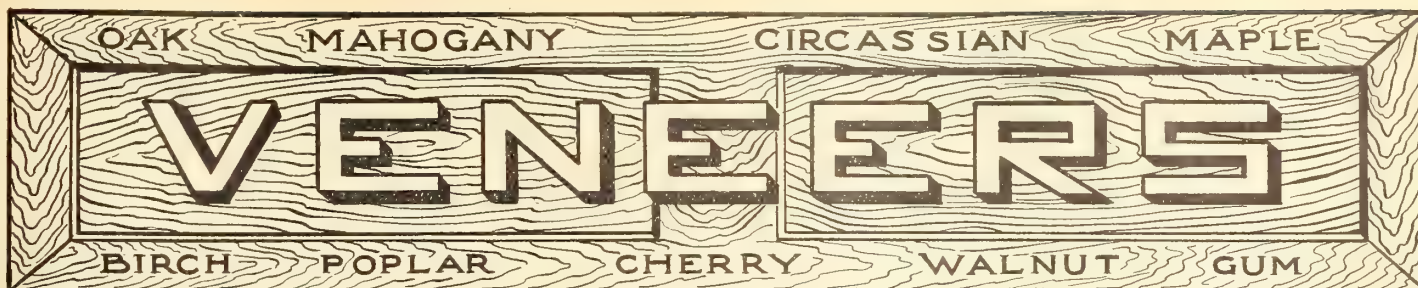
Plywood Men from Japan

A number of veneer machinery houses and plywood factories in America were recently visited by Mr. Kanekichi Uchida, managing director of The Japan Plywood Co., Ltd., Tokyo, Japan, accompanied by Mr. Tetsutaro Tadakoro. These gentlemen were investigating machinery and methods with the idea of incorporating the best in their factory in Tokyo.

During the war, when it was impossible for consumers in the east to get shipments of plywoods from the usual sources, there was great activity among the manufacturers in Japan, who considerably increased their output and exported in quantities. It is evident that Nippon not only intends to hold what foreign trade she has acquired, but is equipping herself to increase it.

Twelve Things to Remember

The Value of Time. The Success of Perseverance. The Pleasure of Working. The Dignity of Simplicity. The Worth of Character. The Power of Kindness. The Influence of Example. The Obligation of Duty. The Wisdom of Economy. The Virtue of Patience. The Improvement of Talent. The Joy of Originating. —Marshall Field.



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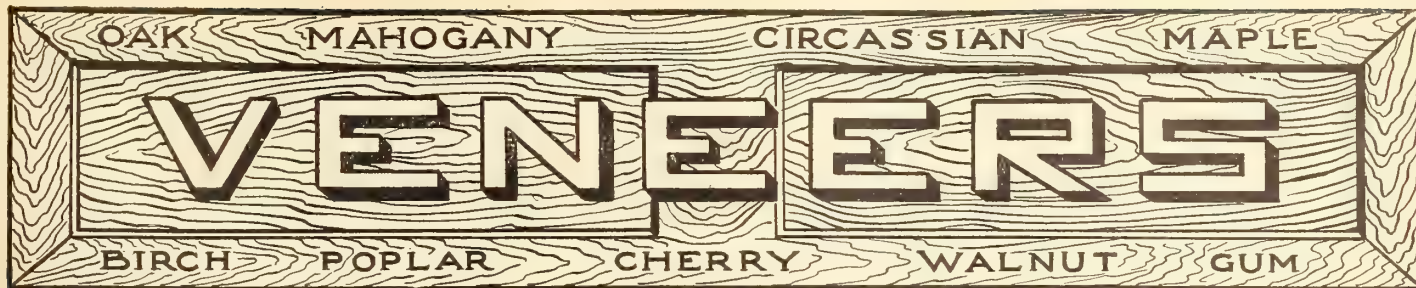
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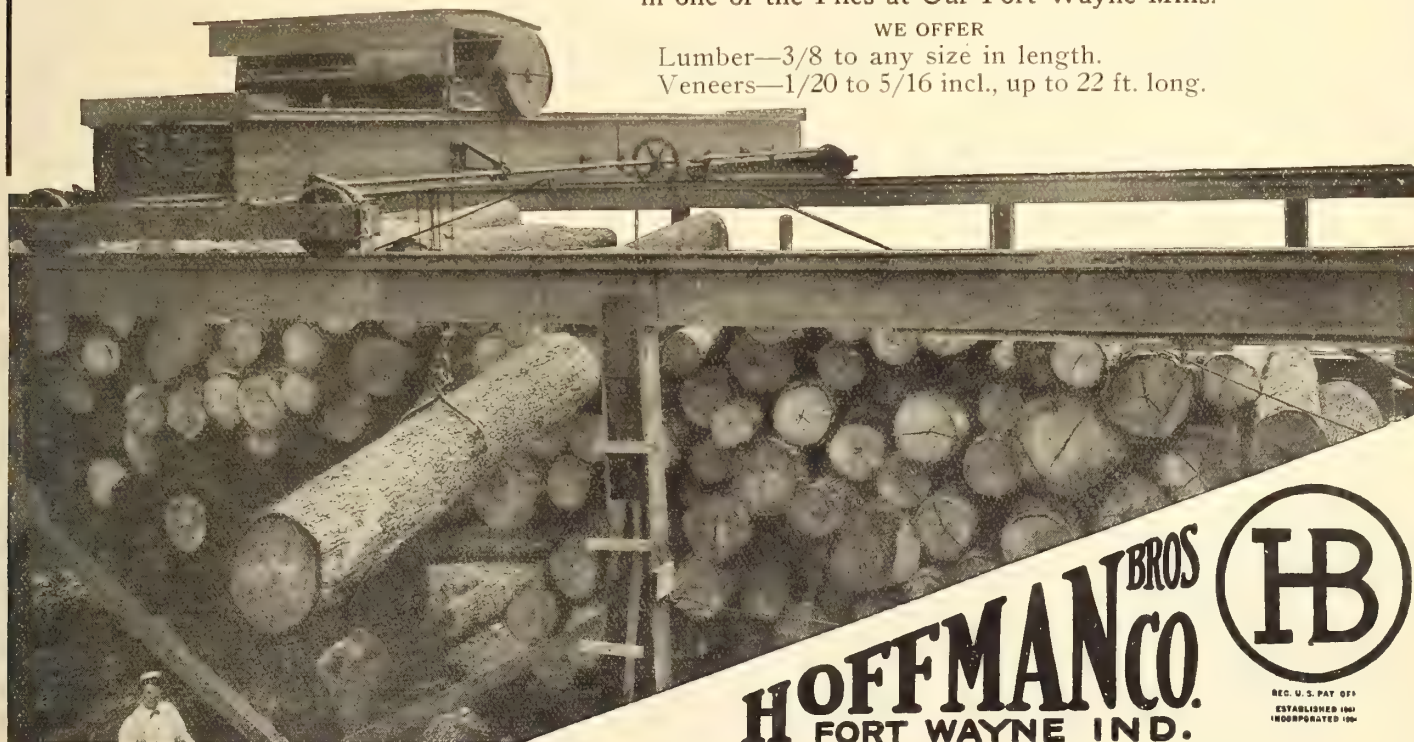
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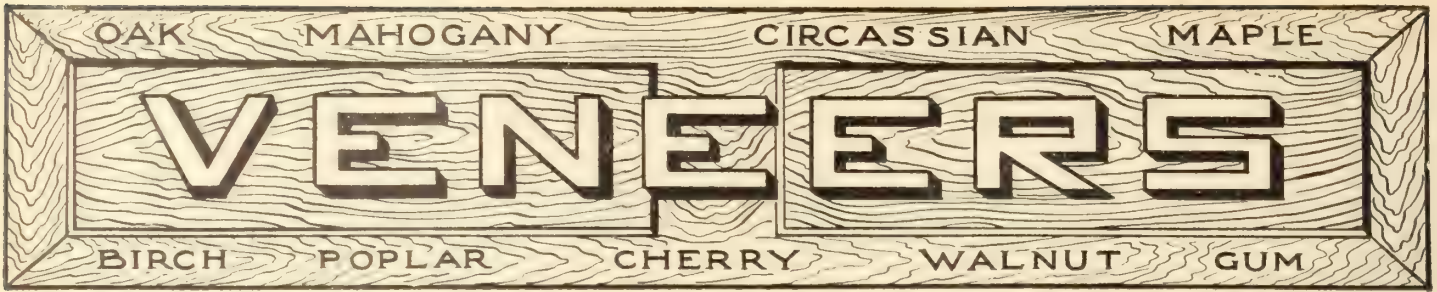
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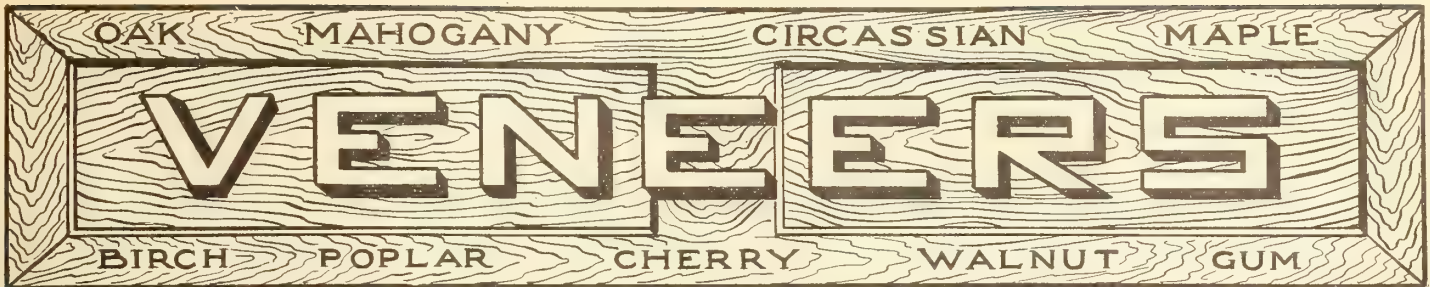
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In charge, Section of Timber Physics and Kiln Drying Ex-
periments of the U. S. Forest Service. Special Lecturer in
Wood Technology and Forestry, University of Wisconsin.
Forest Products Laboratory, Madison, Wisconsin.

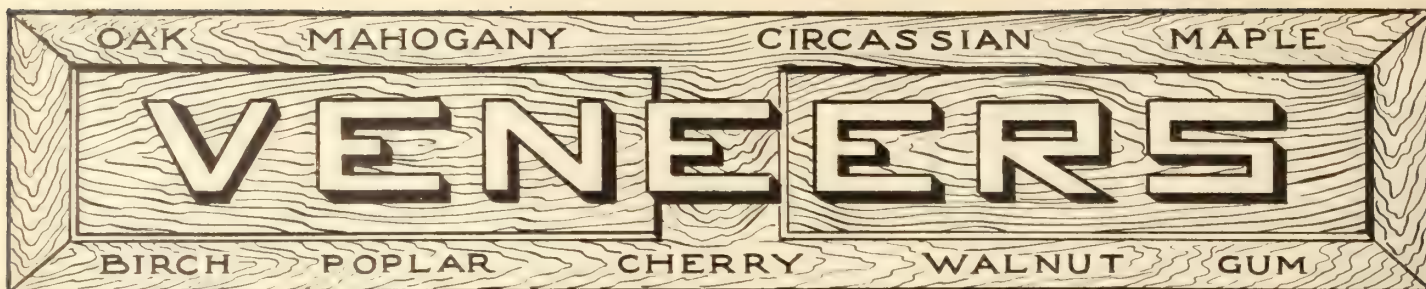
About 280 pages.

The value of a technical knowledge of *kiln drying* is self evident. This book, as does no other upon the market, gives the reader the most recent and most clearly expressed information. The text and illustrations guide the way to the most efficient methods of work.

Price \$4.00

Woodworker Publishing Co., Limited

345 Adelaide Street West, Toronto



Are You Looking for Quality Veneers?

From our large stock of excellent sawed and rotary veneers, poplar and maple crossbanding and sheet stock, walnut butts and long wood and sawed quartered oak veneers we can ship you promptly your requirements. All in first class condition and ready to ship. Let us know your needs in these lines.

W. T. THOMSON VENEER COMPANY

Edinburgh, Indiana

U. S. A.

Figured ^{aⁿ} Plain

Mahogany

Walnut

Quartered Oak
(Sliced and Sawed)

R. C. Birch

Basswood

Maple

Poplar and Gum
(Cross banding and
center stock)

We are in position to furnish the above
PLAIN WOODS

in carload and less than carload lots, and
will be pleased to have your inquiries.

If interested in

FIGURED WOODS

will gladly submit samples.

Veneer Manufacturers Co.

S. E. Cor. Fulton and May Streets, CHICAGO, ILLINOIS

Superior Quality Sawed Quartered White Oak Veneer

1/20" and 1/16"

is our "hobby"

And we give **SPECIAL SERVICE**
on L/C L Orders

Memphis Veneer & Lumber Co.
MEMPHIS, TENN.

Western Office, 516 Lumber Exchange, MINNEAPOLIS, MINN.

Mills at GLADSTONE, MICHIGAN

The Northwestern Cooperage & Lumber Co., Gladstone, Mich.

THE HOME OF "PEERLESS" STANDARD BRAND PRODUCTS

Manufacturers of

"PEERLESS" ROTARY CUT VENEERS

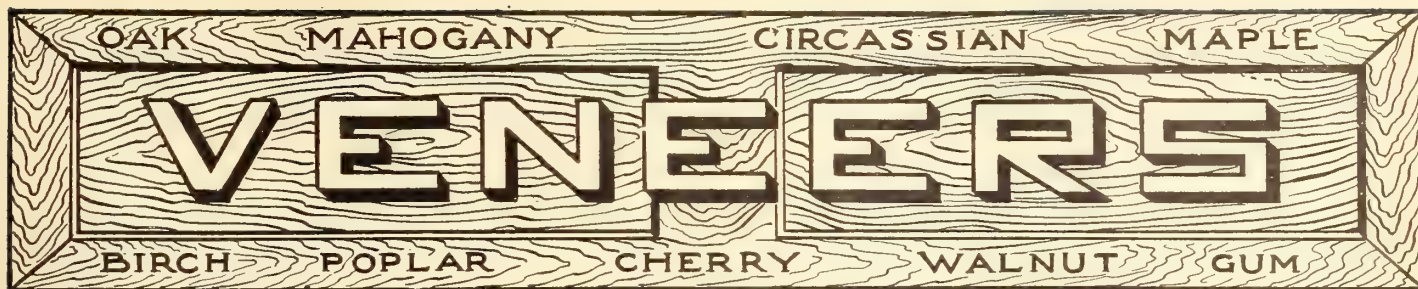
in Birch, Elm, Basswood, Maple, Ash and Beech for all purposes

Also hoops, liners and staves for manufacture of packages

Also "Peerless" Rock Maple, Beech and Birch flooring; Hemlock lumber; Lath, etc.

"Peerless" products are standard everywhere and you are always exercising Safety First in using them. Try us next time.

(When writing mention Canadian Woodworker)



VENEERS of QUALITY

ROTARY CUT—MACHINE DRIED

The following Stock on hand ready for shipment;

WHITE OAK Sheet Stock				YELLOW PINE Sheet Stock				RED GUM Sheet Stock			
	Wide	Long			Wide	Long			Wide	Long	
80,000'	1/20"	8-36"	48-104"	100,000'	1/15"	8-36"	48-140"	125,000'	1/20"	8-36"	48-104"
125,000'	1/16"	8-36"	48-104"	150,000'	1/8"	6-36"	36-104"	200,000'	1/16"	8-36"	48-104"
100,000'	1/8"	6-36"	36-104"					225,000'	1/8"	6-36"	36-104"
RED OAK Sheet Stock				SAP GUM Sheet Stock				50,000' 1/8" Fig.			
	Wide	Long			Wide	Long			Wide	Long	
150,000'	1/15"	8-36"	48-104"	350,000'	1/20"	8-36"	48-104"				
175,000'	1/8"	6-36"	36-104"	400,000'	1/15"	8-36"	48-104"				
				250,000'	1/8"	6-36"	36-104"	100,000'	1/16"	8-36"	48-104"
POPLAR Sheet Stock				SAP GUM Log Run				200,000'	1/8"	6-36"	36-104"
	Wide	Long			Wide	Long			Wide	Long	
125,000'	1/20"	8-36"	48-104"								
175,000'	1/15"	8-36"	48-104"	170,000'	3/16"	6-36"	36-104"	84,000'	1/20"	8-36"	48-104"
150,000'	1/8"	6-36"	36-104"	250,000'	1/4"	6-36"	36-104"	76,000'	1/15"	8-36"	48-104"
								104,000'	1/8"	6-36"	36-104"
									ASH Sheet Stock		

We have four million feet of dry lumber on our yard at Helena, Arkansas, ready for prompt shipment

Your Orders will be given "P-J" Service

We solicit your inquiries

General Offices
Memphis, Tenn.

PENROD-JURDEN COMPANY

Mills
Penjur and Helena, Ark.



Here's Good News for You, Mr. Furniture Manufacturer

Now that the war has been brought to a successful termination and the United States Government has released walnut for commercial purposes, we are again running our veneer mills at full capacity. During the last year and a half we have accumulated some of the finest and best figured walnut logs that we have ever had in our possession. These stumps and figured logs are now being manufactured into veneers and we are in position to offer the finest line of walnut veneers that has ever been on the market.

Penrod Walnut & Veneer Co., Kansas City
Missouri

The primary cause of the shameful surrender of the German Fleet was the loss of morale on the part of the personnel. This was brought about by the strangling effect of Sea Power on Sea communications and the knowledge gained at Jutland that this Power was irresistible. The significance of this to an Empire which is absolutely dependent on Sea Power for its communications is obvious. The lesson to the Empire is that we should never allow our Sea Power to be called into question. It is our Life Blood.

(Sgd.) Jellicoe.

A New Republic

Official notice has been given of the formation and organization of the republic of Georgia, including that mountainous tract stretching from the Black Sea to the Caspian. The region is of interest to woodworkers, for one thing at least, because it produces some of the finest Circassian walnut in the world. The wood takes its name from that region which has been known as Circassia. The Caucasus mountains are in that country, and the Caucasian races are named from those mountains, it being supposed that the mountains were crossed by those races in course of their prehistoric migration from Asia to Europe. The inhabitants of the republic are reputed to possess greater physical beauty than any other people. The country was long a bone

of contention between Turkey and Russia. It will be welcomed into the growing family of republics. The collapse of both Russia and Turkey furnished the occasion for declaring its independence. The Germans seized it about a year ago, but withdrew from the region last May.

Severe Trial of Laminated Construction

A method of making laminated gunstocks was developed at the Forest Products Laboratory at Madison, Wis., which would, without reducing the strength, permit the use of the small pieces of walnut not suitable for single piece stock. This would facilitate production and result in appreciable saving in costs and material. The application of laminated construction to many articles of trade is a development worthy of close study. Shoe lasts, bowling pins, saddle trees, oars and paddles, tanks, barrels and kegs, and various parts of vehicles and agricultural instruments may possibly be constructed with laminated wood.

No one had been able to explain why Napoleon always had his picture taken with one hand inside his coat until our young lieutenant friend returned from France with stories about the cooties he encountered over there!

Many men try to realize on their opportunities before they arrive.

There are some doers that ought to be done up. Ceaseless energy is the price of progress.



Something to Crow About

From our large stock of veneers, Mahogany, American Black Walnut, Quartered Oak, Figured Quartered Gum and plain woods we can fill your order immediately.

Write or phone your order. You are assured of the same prompt and efficient service for which we are well known, and of which we are extremely proud. If you prefer to make your own selections, our large, bright stock rooms are completely at your disposal.

Toronto Veneer Company

1100-1104 Queen St. West.

Toronto, Ontario

POPLAR GUM BIRCH

For prompt shipment we carry in stock large quantities of Rotary Cut, Sliced and Sawed Veneers and Southern Hardwood Lumber.

Send us your inquiries—our prices and service will insure future business.

Christmann Veneer & Lumber Co.
3750 N. Second St., St. Louis, Mo.

MAHOGANY WALNUT OAK**PRESSES**

For Veneer and Veneer Drying

Made in Canada

William R. Perrin

Limited
Toronto

**Every Furniture Designer
and Manufacturer**

SHOULD ACQUIRE A COPY OF
Lenygon's "Furniture in England"

It is an encyclopaedia of artistic suggestion—an education in itself.

Upwards of 400 exquisite half-tone and color plates on pages 14 ins. x 10 ins.

Among the subscribers to this book are Her Majesty Queen Mary, His Majesty the King of Greece, and many of the foremost manufacturers and collectors the world over.

PRICE \$10.00

Delivered to any address in Canada

AGENTS FOR CANADA

The Woodworker Publishing Co., Ltd.
Toronto, Ontario

Stock of Black Walnut Lumber

Ready for Prompt Shipment

March 1, 1919

Thickness	1sts & 2nds 6-10"	1sts & 2nds 10-14"	1sts & 2nds 14" and up	1sts & 2nds 6-7 ft.	1sts & 2nds 4-5½ ft.	No. 1 Selects	No. 1 Common	No. 2 Common	Clear Strips	Clear Face
1/2 inch	33500	12500	....	500	....	....	22500	40900	....	....
5/8 inch	20400	6700	2100	2700	....	3600	50600	74500	....	....
3/4 inch	31500	3800	600	1500	1050	2200	41800	34400	....	....
4/4 inch	153800	32100	8500	5200	6000	98600	359400	620300	8000	7200
5/4 inch	23600	7200	1000	2200	1800	7500	53100	51200	1000	....
6/4 inch	15200	3600	800	800	800	7000	122600	87700	600	....
8/4 inch . . . .	....	....	900	500	300	6200	73806	94300	1200	....
10/4 inch	11400	1600	500	500	300	1200	43800	10500	....	....
12/4 inch	5200	700	....	200	100	....	22800	2500	....	....
16/4 inch	5100	400	....	200	100	....	5800	1700	....	....

We can also furnish Mexican and Honduras Mahogany, White Ash, Yellow Poplar, Cherry and Plain and Quartered White Oak

The Kosse, Shoe & Schleyer Company

Eastern Branch
Baltimore, Md.

Main Office and Band Mill
Cincinnati, O.

The Lumber Market

Domestic Woods

There has been a slight improvement in the local lumber situation during the past month. While the demand has been spasmodic yet it has been increasing steadily. The last week in February and the first week in March were what might be called normal, there being a good movement in all grades of stocks. Enquiries are plentiful and from now on the local lumbermen are looking for a steady business.

Prices are on the whole remaining stationary. In few instances there have been slight reductions made.

Birch is in good demand and quotations have been firm, 4-4 inch and 5-4 inch stock is being asked for, but the supply is very limited. In 6-4 inch there is very little doing while the call for 8-4 inch is fair with good supply in sight. Northern Michigan operators have been endeavoring to unload a certain amount of maple on this market and have shown a tendency to cut the price somewhat, this has resulted in a slight drop on maple quotations. The demand for 4-4 inch, 5-4 inch and 8-4 inch has been fair. 6-4 inch is quiet. A number of cars of 3 inch maple have been sold for export to Europe; this will ease things with regard to heavy stock. Flooring stock which has been very quiet all along has shown signs of reviving and is in slight demand at present.

The same conditions apply to the softwood situation. Demand has been fair and prices on the whole being well maintained. Hemlock is showing surprising firmness. Pine is holding up well and is moving freely. Spruce is quiet and prices have dropped slightly. Box lumber requirements are very light at present. Certain American interests owning large tracts in the Georgian Bay district have tried to force the market by offering some large blocks of pine box lumber at reduced prices, quoting mill run pine shorts at \$32 f.o.b. Toronto.

The situation as a whole seems to augur well for the spring trade. Demand will probably be about normal with prices well maintained and fair stocks in most lines.

Imported Woods

Purchases show a slight improvement over last month. As yet prices are holding well, a lot depends on how necessary it is for the lumber manufacturers to market their product. If they can hold back it is not likely that prices will decline much.

While Britain has removed import restrictions on lumber and timber, shipping rates and space continues to be a serious drawback to the development of an export trade. Conditions should improve in this respect in the near future. There are many enquiries from overseas.

In Memphis there is an acute shortage of logs. Some mills have been forced to close while others are running on part time. Official figures show a hardwood cut of only fifty per cent of normal. With an extremely short supply in sight and an increasing domestic and foreign demand the future prospects look good.

A considerable quantity of southern hardwood has been sold to the United Kingdom, but has been held

back by the lack of tonnage. The different ports are filled with merchandise which will have to be moved before interior freight can be accommodated.

While conditions are improving and are expected to continue to do so and many inquiries are coming in, the buyers persist in complaining that prices are too high. Consequently most of the buying is against immediate needs only. "The Wisconsin and Northern Michigan operations in hardwood and hemlock are confronted with distressing conditions. Reports from 114 operators in this section reveal a situation that is really startling. The normal number of woodmen employed in the logging operations of these concerns is 25,350 and 9,703 are reported as actually at work, a reduction of 60 per cent of the normal force. The amount of logs that can be supplied by this force is estimated at 450,000,000 feet, board measure, whereas the normal supply of the firms submitting reports is 1,293,000,000 feet annually, a reduction of 65 per cent of the supply in usual times. Save for comparatively few items of dry lumber in fairly good supply, stocks on hand are far below normal, and they can not possibly be increased until the newly sawn lumber of next season comes into the market, about July 1st, 1919."

The principal buyers seem to be the furniture manufacturers and phonograph and piano men. With box manufacturers showing up better.

The situation on the whole is not one of discouragement for either wholesaler or manufacturer.

N.S. Lumber for Britain

A report from Halifax, N. S., says that during the last two weeks some sales of lumber have been made by shippers there on British Government account, consisting of 2x3, 2x4, 2x6, 2x7, 2x8, 3x4, 3x4½ and 2½x7, and it is expected that the larger part of the stocks manufactured in Nova Scotia this year will be sold on these Government orders. Considerable shipments of lumber are going forward from St. John to England on Government account.

Horsechestnut Lumber

No horsechestnut lumber is quoted under its own name in markets here, yet a little of this wood is cut, but it probably passes under the name of buckeye or poplar saps. It is put to a special use in southern Europe and might be in this country. Horsechestnut lumber is there in demand for fruit store shelves and display racks. The porous nature of the wood causes it to absorb the moisture from the fruit and thereby hinder they decay of the fruit at the point of contact with the wood. That advantage is sufficient to create a demand there for horsechestnut lumber for the fittings of fruit stores. This tree is not native of the United States, but it has been extensively planted here for ornament, and large trunks are occasionally cut for saw logs.

France Preparing for Reconstruction

A Paris dispatch informs that France is ready soon to undertake actual reconstruction work and plans to spend large sums in the United States for supplies. The French will soon be on the market for \$100,000,000 worth of lumber and timbers, cotton, copper and other raw materials, for \$40,000,000 worth of machine tools, including woodworking machinery, and another \$40,000,000 worth of agricultural implements.

Keep in touch with the SOURCE of SUPPLY

THE vital need in shipping hardwood lumber today is the ability to fill the order from stocks on hand and to start it forward almost over night. This is true in all lines of hardwood consumption. Obviously, to handle such business conscientiously the shipper must be in an unusually strong position, as a distinctly curtailed hardwood production this year puts a frequent strain on the average shipper to properly handle even an ordinary shipment.

The ability to meet just such a situation as prevails today has been the goal of our years of development. That goal was long since attained through a diversified output embracing all the products common to our region and through a versatile manufacturing organization cutting on timber picked out years ago when the selection was unbroken.

Conditions are never so involved but that one or more of our mills can produce the goods on the spot. We have behind our sales a cut of

*70,000,000 Feet A Year of
SOUTHERN HARDWOODS*

Anderson-Tully Company

Quality—**GOLDEN RULE**—Service

Memphis

Tennessee



Newsy Jottings of Interest

Messrs. Hughes & Weir are equipping a woodworking plant at Teeswater, Ont.

Dockerill Bros., Halifax, N. S., upholsterers, are making an addition to their factory.

Fire recently destroyed the sash and door factory of George Gard, Alberton, P.E.I.

The Canada Wood Products, Reg., with head office in Montreal, Que., have been registered.

Beatty Bros., London, Ont., Implement manufacturers, will erect dry kilns in the near future.

The plant of the King Lumber Company, Cranbrook, B. C., was completely destroyed by fire.

The sash and door factory of O'Reilly & Maski, Killaloe Station, was completely destroyed by fire.

The Kelsey Wheel Co., Windsor, Ont., are building an addition to their factory to cost about \$15,000.

Morris Michnik, Hamilton, Ont., contemplates the erection of a building for a mattress factory to cost \$20,000.

The Stewart Phonograph Corporation, Ltd., has been incorporated with head office at Toronto, capital \$40,000.

The firm of Chaumont, Lambert and Wolfe, Montreal, P.Q., cabinet makers, have recently dissolved partnership.

Alex Rae, Guelph, Ont., has recently awarded a contract for the erection of a small factory to be used as a carriage shop.

Fire recently destroyed the carriage works of F. H. Plant, Ottawa. The loss was \$8,000, partly covered by insurance.

The twenty-second annual convention of the National Hardwood Lumber Association will be held in Chicago on June 19th and 20th.

The B. C. Box Company, West Point Grey, B.C., are starting work on a new box factory adjoining their present plant, estimated to cost \$10,000.

The Industrial Varnish Works, Ltd., Hamilton, Ont., have recently been incorporated to manufacture and deal in varnishes, etc., capital \$100,000.

George Kersley, wholesale lumber and veneer, Montreal, has just visited Chicago, Indianapolis, and other United States points, on a business trip.

Application has been made for the winding up of the Preston Chair Company, Limited, Preston, Ont. The town of Preston is the largest creditor.

Fire destroyed the furniture factory of Jas. Lacroix, Ottawa, Ont. Building was completely destroyed. Loss \$5,000, partly covered by insurance.

Among the partnerships recently registered were the Montreal Stuff-over Furniture Co., Montreal, and Colonial Store and Office Furniture Co., Montreal.

The death of H. L. Merritt, Chatham, Ont., recently occurred in that city. Mr. Merritt was head of the firm of Merritt & Co., manufacturers of bent goods.

The cabinet makers and woodworkers in the mills at Ottawa have secured a charter and formed a union. Some years ago they attempted to organize but without success.

The Hilversum Garden City Units Ltd., has been incorporated with head office at Winnipeg, Man., and capital stock of \$40,000, to carry on business as wholesale and retail lum-

ber dealers and manufacturers, and to operate sawmills, planing mills, lumber yards, etc.

The Standard Broom & Brush, Ltd., has been incorporated with head office at Montreal, P.Q., and capital stock of \$45,000, to manufacture brooms, brushes, toys, fancy goods, etc.

J. F. Wildman, formerly general manager of the Office Specialty Co., Newmarket, has taken the position of secretary-treasurer and general manager of the Crown Furniture Co., Preston.

David A. Gordon, Wallaceburg, Ont., prominent manufacturer and ex-M.P. for East Kent, died recently. Among other interests he was associated with the Wallaceburg Co-operative Company.

A by-law to guarantee the bonds of the Sellers Kitchen Cabinet Company of Canada, Ltd., for \$20,000, was recently carried in Southampton. The company expect to commence operations immediately.

Geo. W. King, Woodstock, Ont., died recently. He was with the Karn Organ and Piano Co. for many years and latterly was manager of the Canadian Morehead Manufacturing Company, Woodstock.

Mr. George R. Hackett, general manager of the Robertson & Hackett Sawmills, Ltd., Vancouver, has returned from California, where with members of the family he enjoyed a needed rest of four or five weeks.

A delegation representing the paint and varnish manufacturers of Canada recently interviewed the Canadian Trade Commissioner at Ottawa and decided to send a representative overseas at once to develop an export business.

Stevens-Hepner Company, Limited, of Port Elgin, Ont., have recently taken out supplementary letters patent increasing the capitalization of their company from \$150,000 to \$500,000. The company manufacture brushes, brooms, etc.

Considerable damage was done to building and machinery of Doering & Wilker, Rosthern, Sask., when fire broke out in their planing mill. The net loss is between \$4,000 and \$5,000, and the insurance on the building and equipment \$7,500.

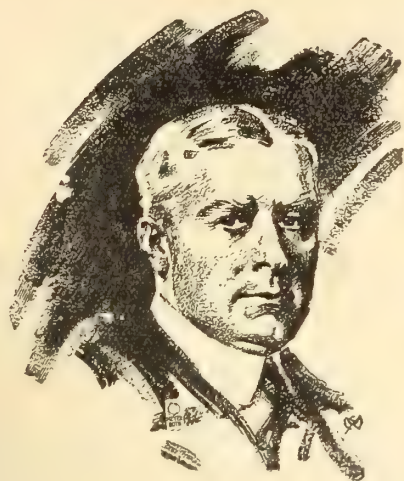
The Paul Lea Company, Ltd., Moncton, general woodworkers, are preparing to handle the largest output they have had for years. Conditions are good in Moncton and the building program for 1919 will probably reach the \$2,000,000 mark.

M. & M. A. Deans, Ltd., have been incorporated with head office at Sprucedale, Ont., and capital stock of \$40,000, to carry on business as lumbermen, saw and planing mill operators, manufacturers of lumber, etc. The provisional directors are M. Deans and J. D. Deans.

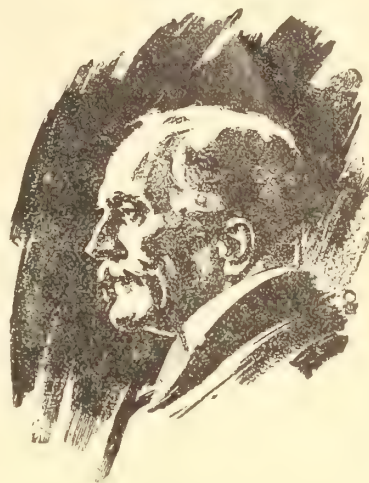
The Canadian Bee Supply Company, Toronto, recently purchased a sash and door factory at Stouffville, Ont. The new owners intend to carry on the old business and to build an addition and install machinery to manufacture their own products, such as bee hives, frames, etc.

Completing its contract for the building and outfitting of 27 wooden steamers in British Columbia, the Imperial Munitions Board recently took the steamer War Suquash out into the Straits for her trial trip. The board completed the 27 boats from laying of the keels to the final trials in twenty months.

A. S. Carson, C.E., Montreal, has been appointed general



*Both men
have made a
SUCCESS,
but —*



This Man is Twenty Years ahead of This Man

They are both successful manufacturers of the same line of goods. The first man started years later than the other, yet his success is twenty years ahead by his business methods. He realized at the beginning the vital factors of successful production—MEN—MONEY—MINUTES. He installed a system that would show him accurately just how much labor he was paying for—and that he was getting that amount of labor because his system of time keeping was up-to-the-minute.

The other man went ahead on the old fashioned, wasteful system of buying labor and recording it. He knew that he had paid so much for his time, but had no check on how much was delivered. His business still lived, because, like his competitor's, his goods were honestly made and in demand. But it has taken him forty years to accomplish **what the first man did** in twenty. In other words, he is twenty years behind his competitor, and how long he will be able to compete, is a question. How do you buy your labor?

International Time Recorders

are built to suit all kinds of business—yours too. They increase the efficiency of every workman and every department—they create confidence between employees and management.

- they reduce clerical work in your payroll and cost departments.
- they cut out manual methods of payroll cost keeping.
- the employees make their own records in their own time.
- closer supervision is possible.
- payroll disputes are cut out.
- discipline is promoted.
- they save money.

So many large and successful manufacturers have installed both International Time Recorders and Cost Recorders that we are confident we can prove to you that they will be an investment you cannot afford to be without. Will you give us the opportunity? Let us send you some of our literature.

International Business Machines Company, Limited

Royce and Campbell Avenues

TORONTO

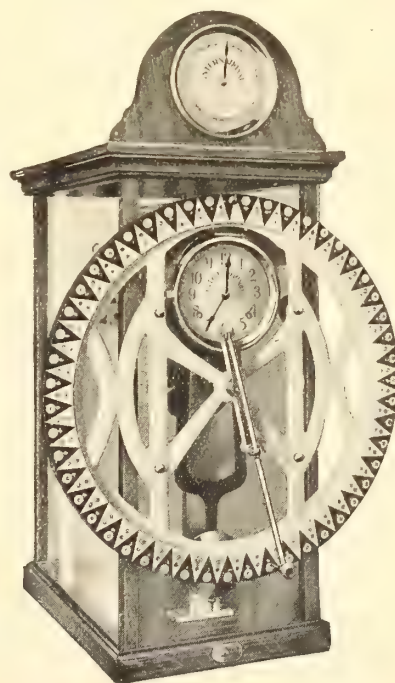
ONTARIO

FRANK E. MUTTON, Vice-President and General Manager

Also manufacturers of

Dayton Automatic Scales and Hollerith Electric Tabulators

Branch Offices, MONTREAL, VANCOUVER and WINNIPEG



secretarial manager and permanent organizer of the Association of Canadian Building and Construction Industries. Mr. Carson has had over thirty years of engineering experience and business connections on a large scale in Britain, United States and Canada.

With the first of five 1,500-ton wooden steamers ready to launch and three more well under way, the New Westminster Construction & Engineering Company, Limited, has laid the keel of the fifth. Simultaneously the company is engaged in the construction of three larger vessels for the Belgian government. Berths and the keels have already been laid.

The North American Bent Chair Co., Owen Sound, now that the British import restrictions have been removed, will be able to ship orders recently received by cable. The representatives that this firm sent to England were successful in securing orders and placed its products in excellent hands. Austria was formerly a formidable competitor for this trade.

Shipbuilding in Nova Scotia seems to be brisk. The following keels have recently been laid: J. N. Rafuse & Sons, Salmon River, N.S., four masted, 600 tons; Arcadian Shipbuilding Co., Saulnierville, N.S., three masted schooner; Clair Shipbuilding Company, Metighan, N.S., schooner, 600 tons; Le Blanc & Company, Wedgeport, N.S., small schooner; Innocent Comeau, Little Brook, N.S., small schooner.

Canadian railway companies are again seeking authority to make increased charges and new regulations in connection with the stop-over service for dressing lumber in transit. It is proposed to increase the rate from one to five cents a hundred pounds, and to raise the minimum charge from \$5 to \$8 a car. It is also proposed that the bill of lading should show the number of feet and kind of lumber in the car.

Enquiries for Machinery and Supplies

C. W. Mitchell, 934 Pender St. West, Vancouver, B.C., asks for a good make of phonograph motors.

A first-class motor for phonographs is manufactured by the Thomas Mfg. Co., Dayton, Ohio. Canadian office—Kent Building, Toronto, in charge of Mr. Griffiths. This motor has a large sale for phonograph purposes.

The B. & N. Planing Mill Co., Milverton, Ont., ask for the name of a manufacturer of wooden spindle carvings in Ontario.

Adam Alendorf, 233 Pape Ave., Toronto, makes spindle carvings. Messrs. J. Walter & Sons, Kitchen, Ont., and the Decorators' Supply Co., Chicago, Ill., manufacture a line of period carvings which might meet the requirements. Their advertisements will be found in this journal.

T. H. Whalen, of Newcastle, N.B., wants to get in touch with Canadian manufacturers of excelsior machinery.

The only manufacturer that we know of is the Elmira Machinery & Transmission Co., Ltd., Elmira, Ont.

A. W. Allen & Son, manufacturers of doors, sash, and other building material, Middleton, N.S., write as follows: "Please tell us where we can procure: 1. Renewable electrical fuses. 2. Three ply wood panels. 3. Douglas fir, oak, etc."

(1) Several houses are now manufacturing or carrying renewable fuses. Among these are the Economy Fuse & Mfg. Co., Unity Bldg., Montreal; Clements

Electrical Corporation, Hamilton; Northern Electric Co., Montreal; Canadian General Electric Co., Toronto; Philadelphia Electric Co. Supply Department, 132 South 11th St., Philadelphia, Pa.

(2) Hay & Co., Limited, Woodstock, Ont., Robert Bury & Co., 1 Spadina Ave., Toronto; and Geo. Kersley, 503 McGill Bldg., Montreal, carry a stock of three ply wood panels. We would also refer you to other advertisements in the Veneer Section of our paper, in which is advertised a complete range of panels and veneers.

(3). We refer you to the Canadian Western Lumber Co., 64 King st. East, Toronto; Vancouver Lumber Co., Excelsior Life Bldg., Toronto; and Knox Bros. Ltd., Bank of Hamilton Bldg., Toronto. The advertisements of several hardwood firms will be found in this issue.

The Thomas Organ & Piano Co., Woodstock, Ont., enquire regarding wooden dowels.

The Canada Wood Specialty Co., Ltd., Orillia, Ont., manufacture a complete line of dowels. The Otterville Mfg. Co., Otterville, Ont., manufacture dowels in the plain style only, 1/4 in. to 7/8 in., and 3 ft. to 6 ft. long. The Canada Spool & Bobbin Co., Ltd., Walkerton, Ont., are now installing dowel machinery.

The Moose Jaw Mill Work Co., Moose Jaw, Sask., write: "Can you tell us where we can procure a computer to be attached to a sticker or other woodworking machine?"

This device is manufactured by the Tally Meter Co., Norwich, Conn. It is applied to moulders, planers, rip saws, etc., for the purpose of measuring the quantity of stock.

Information Wanted for Finishing

Mont Joli, March 3, 1919.

Editor Canadian Woodworker:—

I manufacture a line of children's sleighs and carts. Have been finishing these in the natural, that is, one coat of orange shellac and one coat of varnish. As shellac is very expensive I want to know if there is any other preparation that would give a good durable finish, would cost less and which would not require two coats.

Sincerely yours,

O. Bertin.

If any of our readers can furnish us such information we will be glad to have them send it to the "Canadian Woodworker," 345 Adelaide St. West, Toronto.

The Follow-Up

The follow-up idea in business is generally applied to the prospective customers and to collections from slow payers, but it is an idea capable of wider expansions. It may well be applied to the product itself. By following up your product and making inquiries about it from time to time you can get a positive line on how it stands the test of time and use. That is certainly worth something for it will help you to determine the exact quality of your product as compared to others, to know whether the customers are satisfied or not, and if not it will help you in locating and removing the cause. The follow-up idea is too good to limit its use to getting customers and collecting accounts; try using it on your product and get a wider use of it.

Mississippi Delta

Gum

Quartered and Plain
Red and Sap

Oak

Quartered and Plain
Red and White



The
KORN-CONKLING Co.
CINCINNATI, OHIO

Mills; Percy, Mississippi

"WELL BOUGHT IS HALF SOLD"

Yours for the Asking

- 3 Cars 8/4" No. 1 Com. and Btr. Hard Maple.
- 2 " 12/4" No. 1 Com. and Btr. Hard Maple.
- 1 " 16/4" No. 1 Com. and Btr. Hard Maple.
- 1 " 10/4" No. 1 Com. and Btr. Birch.
- 1 " 16/4" No. 1 Com. and Btr. Birch.
- 1 " 4/4" No. 3 Com. and Btr. Winter cut Basswood.

STOCK IS DRY and would please you

Canadian General Lumber Company, Limited

712 Bank of Hamilton Bldg.
TORONTO

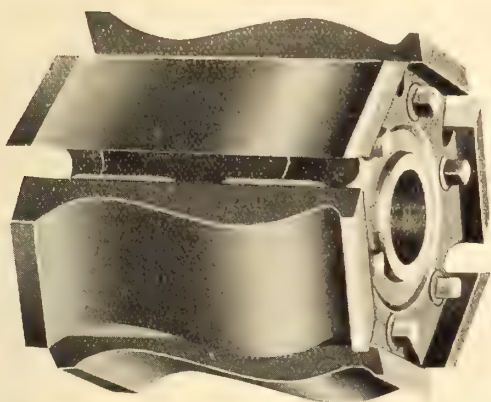
MONTREAL OFFICE: 203 McGill Bldg.

Selling

Graves, Bigwood & Co.'s Lumber, Lath and Box Shooks

The Diehl Adjustable Cutter Head

For Jointers, Shapers and Stickers



**National Sweeper Company Has Used Diehl
Cutter Heads for Over Six Years
—Still Using Them**

All of their moulding machines and two of their shapers are equipped with Diehl Cutter Heads. They say: "We have previously used numerous styles of heads and knives, but have found your adjustable head the most satisfactory of any."

**The G. M. Diehl Machine Works
Wabash, Indiana**

Value of Plant Appraisal is Under-Estimated

Inventory Concerning Building and Equipment Assets Is Very Lax—Descriptions Are Entirely Inadequate and Valuations Always Erroneous—The Correct Distribution of Insurance—Cost System Use of Appraisal

By Williams F. Worcester

The ordinary inventory is very exact in the matter of stock and very lax as regards building and equipment assets.

Suppose we take it for granted that every establishment of any consequence has established a valuation on the plant. In many instances this valuation, if placed by owners, is carried in lump sum, including land, buildings, good will, locational value, customers and business all combined. There may never have been an accurate separation of these elements of value, or the division may only have been merely estimated. In some instances the owners realize the necessity for accurate values and attempt to do the work themselves. They start in bravely, are soon interrupted with more immediately important matters or they delegate certain of their force to do the work and in the end find that it costs them as much or more than if done professionally and the work is amateurish.

Specialization.

Having others do work which possibly the owners are more or less capable of doing themselves is merely carrying out the principle of specialization. The people who devote their entire time, thought and energy along a particular line are the ones best to be entrusted with the work. Then there are standard recognized methods being followed instead of haphazard listing. The work is made up with accurate piece bills and correct descriptions. Valuations are based on provable reproductive prices instead of original costs. Depreciations are figured in accordance with actual condition of the property instead of so much off per year. Appraisal companies ordinarily never inquire as to the original cost inasmuch as to-day prices are entirely a different matter than what may have been paid for the property.

After a Fire.

An instance came to attention concerning a property originally built in 1905, sold in 1908 for a lump sum, sold again in 1912 and again in 1915, the fourth owner recently losing the property by fire. Of course he knew what he had paid, but it was necessary to prepare a proof of loss and the adjustment was a piece of guess work more or less unsatisfactory to all parties. Many properties have been rebuilt, added to or altered from time to time, the owners know possibly how much money has been spent, but they don't know how much the property is worth.

Consider the difficulty in case of a fire in rebuilding a picture of the property, detailing the dimensions, material list and all data concerning each item of the equipment, picking out from memory or with the aid of some old inventory sheets. How much better it is to recognize the possible necessity for such data, prepare yourself in advance with complete data. Then in case of fire or for whatever use, you have ready a complete showing of the property satisfactory to all concerned. There will be enough to worry over in the listing of stock, making arrangements for re-building, plans for taking care of trade and other troubles, without

having the details of building and equipment values to bother with.

Experience has shown that in many instances of divided insurance, based on owners valuations, there have been serious discrepancies, over insurance at some points and under insurance on other property. It is essential to have values properly scheduled, valued and insured, as after a fire is too late to adjust such matters.

Owners Valuation Never Disinterested.

No matter how carefully the property may be listed by the owner, suppose for instance it were done exactly as well as could be by the best experts, the valuation placed by the owners, especially on the question of depreciation, could never be regarded as being unbiased. It may be the full intention to be entirely disinterested, in fact the average business man, in his effort to be fair, leans in the other direction and the values may be placed too low. This has proven to be the case in many instances, but if the property was to be sold the owner would never be given credit for a low valuation.

Think how much more conclusive is evidence of value prepared by outside experts, certified, put up in book form, each property with its plant plan drawing showing location, railroad and other facilities, bound with the complete description and accurate provable values. Then if it were ever desired to make exchanges, adjustments, statements, transfers, or data for whatever purpose, it is readily at hand. How much more convincing is it to be able to sit back and announce that the data was prepared by a company in that line of work, with no financial interest whatever in the property.

Cost System Use of Appraisal.

One of the fundamentals of any satisfactory cost system is an accurate valuation of property. What per cent. is your profit on your investment? By investment we mean the value of the property. Suppose you carried the property at \$20,000 and a profit of \$2,000 was shown which would be 10 per cent. and not so bad. Suppose, however, the property was really worth \$40,000, the same profit would be only 5 per cent., which is not satisfactory.

Who among you have not overdue accounts to collect or many other important matters which should be attended to. Why not have done by others what can be done better and cheaper, thereby securing disinterested, accurate service, acceptable as a proper basis upon which to arrange insurance and proof of loss in case of fire.

Appraisal companies do not require the assistance of the owner. They make their own sketches, secure field notes, measurements and all data in standard manner. The work is priced, extended and totalled in proper detail, summarized and certified, put up in book form with drawings and indexed in easily accessible manner. If you were to do this work yourselves or have your employees do it for you, if you count your time and theirs, it would cost you as much or more than to have it done by regular standard method.

*Extracts from an address before the Northwestern Lumbermen's Association, Minneapolis, Jan. 15th, 1919.

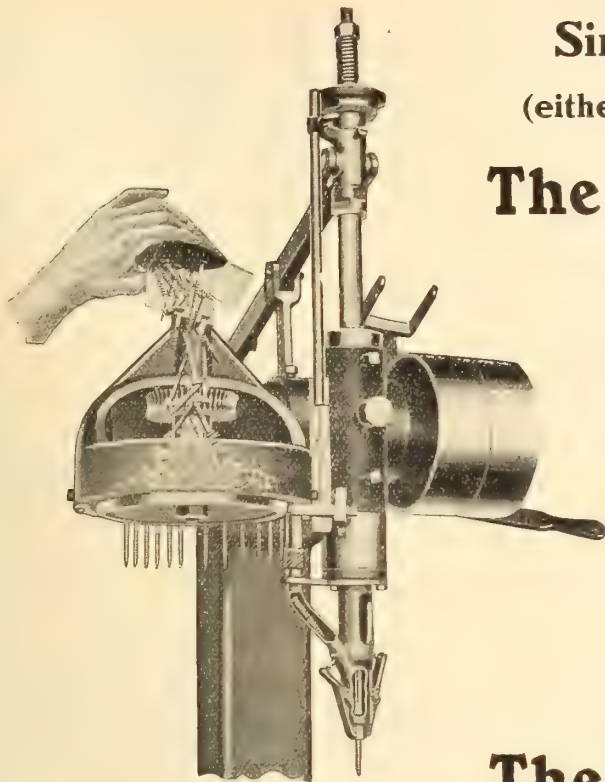


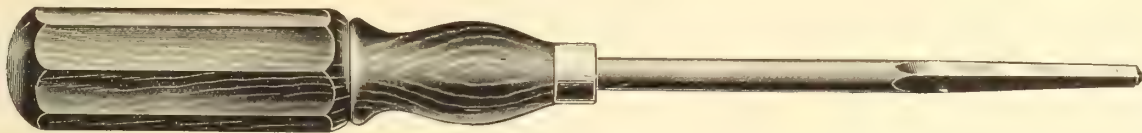
Illustration shows action of the magazine of a Reynolds Automatic Screw Driving Machine.

Simply Dump a Gross of Screws (either wood or machine) Into the Hopper The Machine Does the Rest

The Reynolds Automatic Screw Driving Machines will enable you to increase your output in a more efficient manner at less cost and in quicker time. With these machines an average of 1,000 to 1,200 screws may be driven in one hour. It works **automatically**, attaining a speed impossible to hand work. Let us show you how you can save from 25 to 40 per cent, of your labor expense and at the same time accomplish better work.

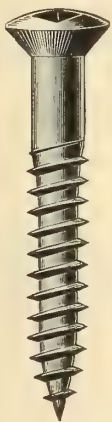
Write us for our catalog E., giving a full description and a list of users.

The Reynolds Machine Co.
Massillon, Ohio, U.S.A.



For That Particular Work Use **Robertson** Patented Socket Head **Wood Screws**

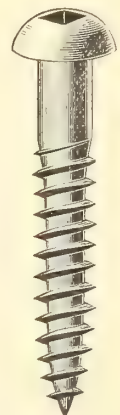
See That
Square Hole?



Whether when turning out that special work or just the ordinary everyday run you will find **Robertson's Patented Socket Head Wood Screws** the most adaptable to your needs. They eliminate the danger of marring, which is so often the cause of trouble with the old style screws. They'll save you time, money and labor, because they drive quicker, look neater and hold better.

We manufacture bits for all styles of power and ratchet drivers, and supply them free with your first order. Our guarantee is behind our product. Our prices and samples await your request. Write us today.

See That
Square Hole?



P. L. Robertson Mfg. Co., Ltd.
Milton - - - - - Ontario

WANTED

Second-hand planing mill, sash and door machinery. H. L. Martin Lumber Company, Limited, Saskatoon, Sask. 3-6

FOR SALE

2 Reynolds Automatic Screw Driving Machines, in first class condition.—A. Coates & Sons, Manufacturers, Burlington, Ont. tf

For Sale

700,000 feet B. C. Spruce, also quantity of Ash; A1 stock. Located in Toronto. For price and particulars apply Box 56, Canadian Woodworker. 3

FOR SALE

No. 90 Berlin High Speed Matcher (Profilers).
No. 77 American High Speed Matcher.
43" Berlin 3 Drum Sander.
42" C.M.C. 3 Drum Sander.
60" Columbia 3 Drum Sander.
2-3 Box 53 Canadian Woodworker

FOR SALE

2 Broomhandle Machines, Ober Mfg. Co.
1 Sanding Machine, Ober Mfg. Co.
1 Skewer Dowel Machine, Canada Machinery Co.
1 Skewer Pointer.
All in first class condition.
Apply to Box 54 Canadian Woodworker, Toronto. 2-3-4

**FOR SALE
New Machines**

(Never Used)

Moulder, C.M.C. make, No. 303, 12" Surfacers, Cowan M-220, Single, Divided Rolls.
Rip Saw (Power Feed) C.M.C. No. 606. Will sell for 25% under Factory Price. Also Sheldon No. 70 Fan and Separator.
Box 50, Canadian Woodworker, Toronto. tf.

For Sale

Box Board Printer 3-color
Box Dovetail machinery (full set).
Box Lock Corner Machinery (full set).
Box Board Matcher (Cowan).
Box Board Squeezer 30" Mereen
Berlin 54"—No. 289 Vertical Band Resaw.
Berlin 64" Horizontal Slab Resaw.
Mereen Horizontal Slab Resaw.
Mereen Hopper Feed Resaw.
C.M.S. 48"—No. 708 Band Resaw.
Cowan 48"—M—76 Band Resaw.
Double Surfacers (Berlin and Fay).
Chain Mortiser (2).
Moulders 13", 12", 8" and 6".
Buzz Planers 24", 16" and 12".
Corliss Engines 18", 16" and 12".
100 H.P. Boiler (2).
2-3 Box 52 Canadian Woodworker.

**Do You Want Machine Tools
for Your Repair Shop?**

Lathes, Drills, Grinders, Shafting, Pulleys, etc. Now is the time to buy cheaply. We are in touch with munition firms who are selling their tool room equipment. We can supply any tool wanted.

W. H. Sumbling Machinery Co.,
3-4 7 St. Mary St., Toronto.

For Sale

Continuous Feed Glue Jointer.
30" Whitney Single Surface Planer.
12" 4-Side Cowan Moulder.
10" 4-Side Clark & Demill Moulder.
42" Band Resaw, 4" Saws.
Cowan 236 Chain Mortiser.
No. 4 Waymouth Variety Lathe.
8 x 26 Open back Morgan Nailer.

The Maydwell Manufacturing Co.,
65 Saulters Street, Toronto.

Employing Demobilised Soldiers

No more urgent task follows upon the demobilisation of the Forces than the reinstatement in civil life of the soldiers and sailors. The number of men to be dealt with in this country alone makes the labor gigantic; but the machinery exists for performing it, and it only remains for intending employers and employees to avail themselves of their opportunity. The employment exchanges, assisted by the local advisory committees, which represent equally the interests of both parties in every neighborhood, have the organization ready for use. The staffs of the exchanges have been considerably strengthened in order to meet the extra strain thrown upon them. It is not generally known that branches have been set up to deal with discharged men only, and in a great number of cases special sections for disabled men have been established. As far as possible, the work in these new additions to the exchange system is carried on by men in the same position as those whom they are helping back to civil employment. Discharged men, with no small proportion of disabled among them, superintend the placing of discharged and disabled men. It has been found that the loss of an arm, of a leg, of two legs, and even of eyesight, is no insurmountable obstacle to the performance of efficient work, given employers who will employ the men, and the exchanges which make use of such men are patent examples of the fact that war, even when it has dealt serious bodily injuries, does not unfit the fighter for successful life as a civilian.

FOR SALE

Battery of "Bowser" Tanks for
Finish Room. Good Condition.

t.f. Box 32, Canadian Woodworker

**PETRIE'S
LIST**

of NEW and USED
WOOD TOOLS
FOR IMMEDIATE DELIVERY

Wood Lathes

20" Sidney, "Famous."
16" Canada Machinery Corporation.
16" Chamberlain, back geared
16" Sidney, "Famous."
14" Sidney, "Famous."

Wood Planers

30" Whitney pattern surfacer.
26" double surfacer.
24" Champion planer and matchers, moulding attachment (2).
24" Galt, planer and matcher.
24" Hermance, double surfacer.
24" MacGregor-Gourlay.
24" Sidney, "Famous," single surfacer.
18" Sidney, Famous.
16" Buzz, with slotted head.
12" Perfection, buzz.

Band Saws

36" MacGregor-Gourlay, circular, re saw
36" West Side, pedestal.
30" Ideal, pedestal (3).
30" Cowan, bracket.
30" Goldie & McCulloch, bracket.
27" Sidney, "Famous," pedestal

Saw Tables

No. 2 Famous, variety.
No. 2 Crescent, boring attachment.
Galt, non frame, cut off.
MacGregor-Gourlay railway cut-off.
Greenlee automatic cross-cut.
7' Williams, swing saw.
4 1/2' wood frame, swing.
Canadian, steel frame, pole saw.
Vaughan, portable, drag saw.
Champion, portable drag saw.

Mortisers

Cowan, upright, power.
Fay, upright, power.
Galt upright, compound table.
No. 1 MacGregor-Gourlay upright, power.
No. 5 New Britain, chain.
No. 2 Smart, foot power.
No. 1 Smart, foot power.

Moulders

13" Clark-Demill four-side.
12" Cowan four side.
12" Woods four side, inside
10" Houston four side.
8" Dundas four-side.
7" Cowan double head.
6" Cowan four side.
6" Dundas sash sticker.

Clothespin Machinery

Humphrey automatic lathes (5)
Humphrey double slotters (3)

Miscellaneous

No. 30 Famous, universal woodworker.
Fay, horizontal, boring machine.
No. 920 C. M. C., post boring machine.
No. 2 Defiance, belt sander.
Fay & Egan 12 spindle dovetailer.
MacGregor-Gourlay 12 spindle dovetailer.
No. 1 Ballantine dowel machine.
Dundas double-head tenon machine.
20" Superior saw arbors.
Hall's automatic shingle machine.
Waterous lath machine.
26" Dominion lath trimmer.
6' Linderman, automatic, glue jointer.
No. 3 Defiance, rim & felloe rounder.
No. 1 Defiance, axle shaper.
No. 1 Defiance, spoke driver.

Ask to see our large stock of used supplies—belting, pulleys, machine shop equipment, mill supplies, pipe and fittings. This material is as good as new, and can be bought at greatly reduced prices.

H. W. PETRIE, LTD.
Front St. W., Toronto, Ont.

Perkins Vegetable Glue

Same Old Glue

Same Old Service

Same Old Process

Same Old Guarantee

under the

Same Old Name Perkins Glue Co.

You know what this has meant in your glue room for years past.

A REAL vegetable glue, as good or better than Animal glue, cannot be sold and used for wood joints, which does not infringe our United States Letters Patent, held valid and infringed by United States Circuit Court of Appeals. Corresponding Letters Patent granted in Canada.

Perkins Glue Company

Factory

Lansdale, Pennsylvania

Sales Office:

South Bend, Indiana

NAPCO WATERPROOF GLUE

STANDS:—BOILING—BAKING—SOAKING—CLIMATIC CONDITIONS

Can you guarantee to your customers that your products will withstand these tests? If not, use NAPCO—the ideal Glue for

VENEERS
PANELS
CABINETS

SASHES
FURNITURE
BOXES

DOORS
PIANOS
COLUMNS

PULLEYS

ALL JOINTS

MIXED COLD—APPLIED COLD—TO COLD WOOD

NAPCO adds value to your product—Makes better advertising—Increases sales.

Write for Information and Sample to

ROBERT BURY & CO., CANADA, Limited

HARDWOOD AND VENEER MERCHANTS

Head Office

1 Spadina Avenue, TORONTO

Lumber Yard, Warehouse and Mill

Foot Spadina Ave., TORONTO

KANE VEGETABLE VENEER GLUE

Quality—None Better

We guarantee that the process used in the manufacture of Kane Vegetable Veneer Glue, and also the dissolving with **water and caustic soda** in the usage of same by the consumer, do not infringe any patents, and particularly the patents recently construed by the Court of Appeals of the Seventh Circuit, or the Decree of the U. S. District Court at Chicago, signed August 5, 1918.

Manufactured and sold exclusively by

KANE MANUFACTURING COMPANY

28 E. Jackson Blvd., CHICAGO

Certus Cold Glue

What

The Original Waterproof Glue. Comes in the form of a white powder. Easy to handle. Will keep indefinitely.

Where

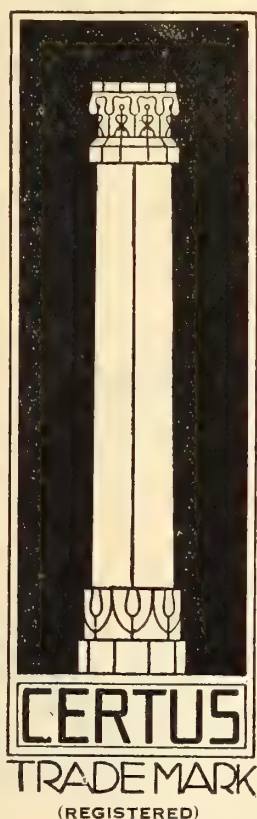
Everywhere. Will produce a wood joint or panel of higher adhesiveness and resistance than animal and vegetable glue. Equally good for jointing together steel, brass, stone, glass, linoleum, cork, cloth, etc., to wood and leather.

How

Easy to prepare. Simply add cold water to powder, mix and let stand for 15 minutes. That is all. It is then ready for use. **Batch of veneer glue good for 5 hours, the same of joint glue good for a day's work, without the slightest deterioration.** Easily applied with brush or spreader. Agreeable to use. Saves heat and dry kiln.

Certus stood foremost in fulfilling the exacting needs of war production. This fact should commend it to manufacturers who are going to build during times of peace on the basis of merit and quality. Certus is an absolute necessity for manufacturers who contemplate seeking foreign markets. Certus-built products will resist indefinitely the most humid climates.

We make Certus glues for every need. Write us what your requirements are and we will gladly send you sample. Our services are at your disposal.



CERTUS COLD GLUE CO.
Detroit, Mich.

FAULTLESS

Infinite accuracy of manufacture—
constant uniformity of performance—
knowing what to expect and basing
construction on a known factor of
reliability—simplicity and easy move-
ment.

Fashioned in the belief that the sale
of furniture is severely handicapped
unless it is equipped with casters
able to perform with least effort.
These are features that combine to
invite your SPECIAL consideration
for FAULTLESS PIVOT-BEAR-
ING CASTERS.



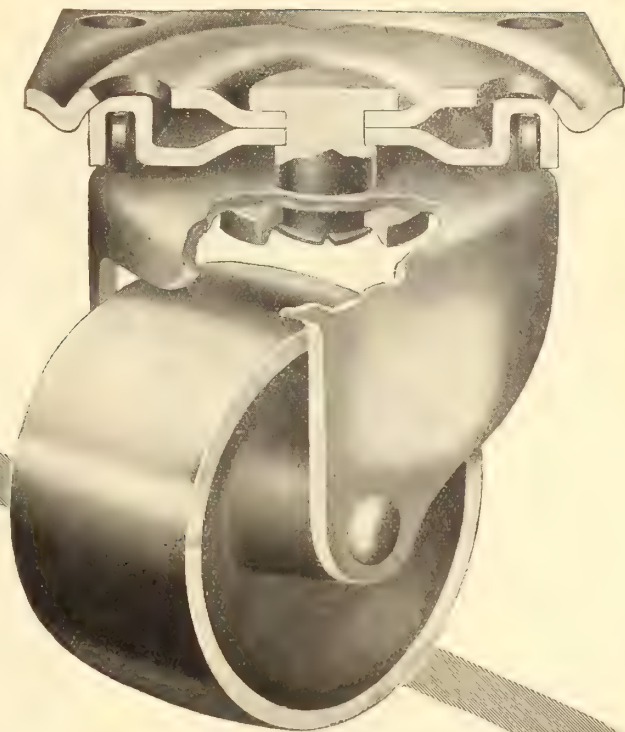
Manufacturers of

*Pivot Bearing and Grip Neck
Furniture Casters*

Faultless Caster Co.

Evansville, Indiana





Rolls Smoothly

Under the heaviest loads
there is never a grind or
a groan from this new

Efemco PLATE CASTER

It is a caster of exceptional silence, endurance and fine appearance, expressly made for fine furniture makers and for jobbers of the most reliable hardware.

We emphasize its ability to add beauty and utility to furniture; also its positive saleability.

EFEMCO PLATE CASTER has unusual strength, rigid structure, ease of swiveling, positive space in the rollway and an extra large axle.

Stubby and stalwart—the bulldog of casters.

Furnished in plate and gripneck styles. Sizes 1, 3, 5, 7, 8, 9.

Write to-day for prices.



FOSTER, MERRIAM & CO.

Meriden, Connecticut

New York Office: 225 Canal Street

*Standardized
by 84 years of service*

SIMONDS SAWS



AT the saw mills where they "treat 'em rough" men know from experience what wonderful saw value there is in Simonds Circular and Band Saws.

The same excellent quality of steel goes into the making of saws for woodworking shops, planing mills, and box factories, and while the work may not be quite so severe it is just as much to your advantage to operate a Simonds Saw as it is to the advantage of the millman.

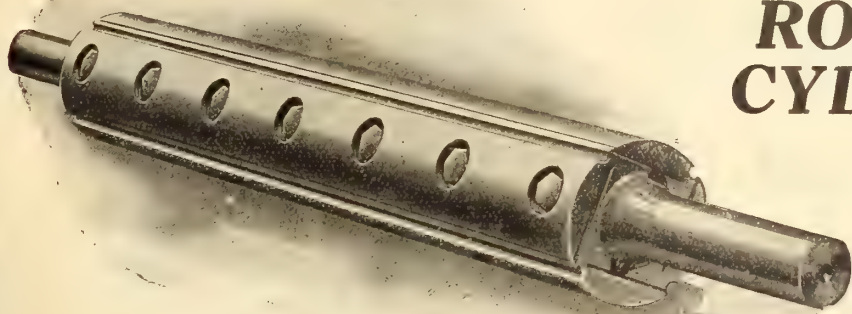
Let us quote you prices on Saws or Planer or Moulder Knives.

Simonds Canada Saw Co., Limited

Vancouver

St. Remi St. and Acorn Ave.
MONTREAL, QUE.

St. John, N. B.



We are also dealers in new and rebuilt Woodworking Machinery.

PATENTED ROUND SAFETY CYLINDER HEAD

Two and four-knife heads for jointers. Round heads for moulders, top, bottom and side heads. Six-knife heads for flooring and surfacing machines. Write for particulars.

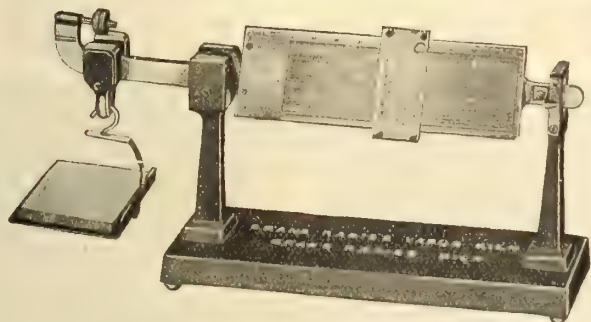
Tawney Machine Co.
WILLIAMSPORT, PA.

Is Your Lumber Dry

$$\% \text{ Moisture Content} = \frac{\text{Loss of weight} \times 100}{\text{Absolute Dry Weight}}$$

This formula can be used with weights obtained on ordinary scale but involves complicated figuring with long division and the use of decimals with resulting loss of time and chance for error.

Grand Rapids Lumber Tester



is self computing and eliminates waste of time and chance of error.

GRAND RAPIDS VAPOR KILN

Made by GRAND RAPIDS VENEER WORKS
Grand Rapids, Mich. Seattle, Wash.

No. 161 Self Feed Rip Saw



This is a powerful, sturdy rip saw which carries saws up to 20" diameter and will rip 16" between saw and gauge. The mandrel has four bearings, one beyond the saw and is provided with 8 inch extension for using two or more saws. The feed rolls are adjustable to and from the saw for feeding short stock. This is a useful machine in any plant. Write for Circular.

Hall & Brown Wood Working Machine Co.
Home Office and Factory, 1913 to 1933 North Broadway
SAINT LOUIS, U.S.A.

We have the best facilities for the Manufacture of SPRING MATTRESS and CAMP COT FRAMES

also DIMENSION STOCK
in Maple, Beech and Birch

Write for prices.

John P. Newman Sons'
WIARTON, ONT.

Wire, Wire Bale Ties and Wire Products

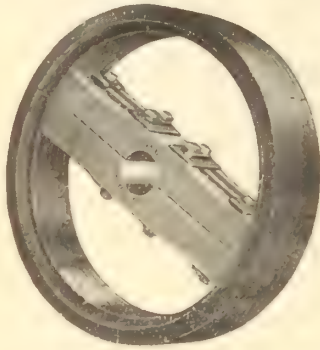
Bale ties, Heading ties, Lath ties, Hardwood Flooring ties, Wire Nails, Flat Steel or Wire Barrel hoops. All sizes of Fine wire in Bright, Tinned or Galvanized, manufactured to order.

Laidlaw Bale-Tie Co., Ltd.

A. T. Diggins, Toronto, Ont. H. E. O. Bull, Montreal, Que.
Harry F. Moulden & Sons, Winnipeg, Man.

Head Office and Works: Hamilton, Canada

BERNARD



Wood Split Pulley

With greatest care we select and treat the materials to be built into the

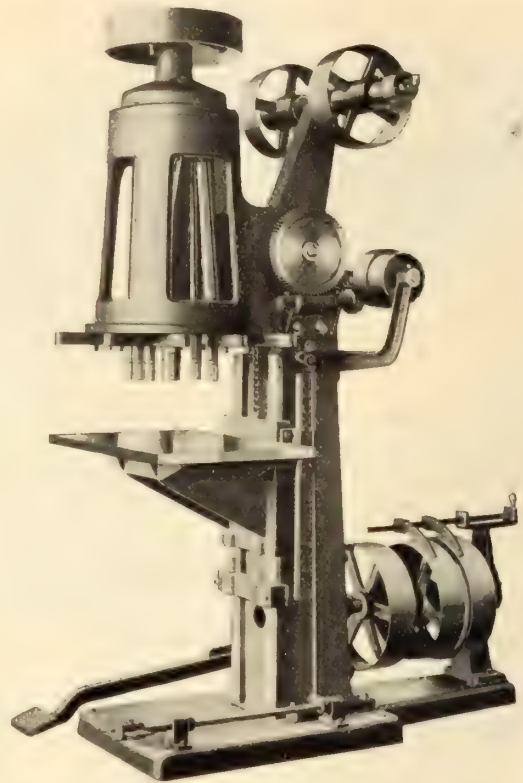
Bernard Wood Split Pulley

It is bound to give you entire satisfaction for years. Write for price and service particulars.

The A. Bernard Industrial Co.

Maintainers of High Grade Power Transmission Appliances

Office and Works - Fortierville, Que., Canada



Root Universal Borer—Multiple Spindle

Bores 4 to 30 holes at once and just as quick as only one hole. The profit is yours—ours, the pleasure to serve.

B. M. ROOT CO. - YORK, Pa.

Gluing Edges



Quick Work
Clean Work

Good Work
Economical Work

For gluing straight or shallow tongue and groove joints of thick or thin stock (singly or several pieces at a time) of any length; or for gluing taped edges of face veneer.

SELF-CONTAINED MACHINE—

REQUIRES NO BELT POWER

Francis
EST. 1880.

Main Office
and Factory
RUSHVILLE, IND

Francis
EST. 1880.

Specialists in Glue Room Equipment—Hand Screw and Hydraulic Veneer Presses, Glue Spreaders, Glue Cookers, etc.



Thos. S. Young, General Manager

Hugh C. MacLean, Limited

Publishers

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Contract Record Electrical News

MacLean Daily Reports, Ltd.

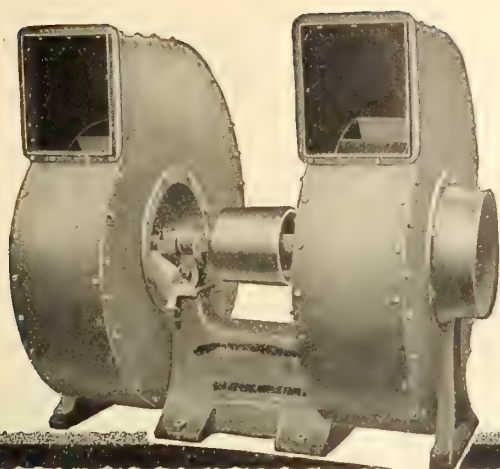
Advance Information on Building
and Engineering

The Hugh C. MacLean Co., Ltd

Publishers

Coal Review Western Canada Contractor
The Commercial Western Lumberman

Toronto, Montreal, Winnipeg,
Vancouver, Chicago, New York,
London, (Eng.)



CANADIAN Slow Speed Reversible MILL EXHAUSTERS

require from 15 to 25 percent less power—and they are designed to handle shavings and other stringy material, as well as sawdust, bark, gases, smoke, etc. Bulletin 256-13 gives tables of speed and power requirements. May we send you a copy?

**Canadian Blower & Forge
Company, Limited**
Kitchener, Ont.

AUTOMATICALLY CONTROLLED



National Compartment Kilns

are the only Kilns having
**absolutely automatic
Humidity Control**

Write for particulars

THE NATIONAL DRY KILN CO.

1117 East Maryland St., INDIANAPOLIS, Indiana

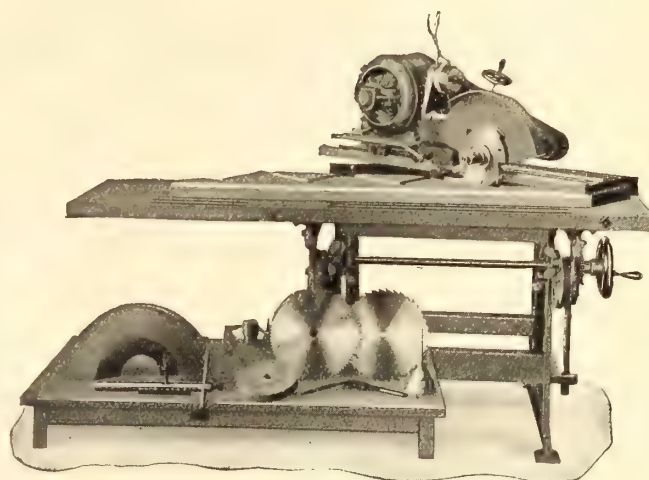
Why an

Elliot Woodworker

will save you 25% of labor and material

You can put the machine on the Job, and cut Joist, foot plumb and side cuts of Jack and Common rafters, use up cuttings for bridging, make all your drawers, cupboard doors, door and window frames, house out stair-stringers, dado, groove, miter, bore, run mouldings, in fact you have a mill on the job.

If you have no electric power or light, we can supply you with a machine to run by gasoline or other power. Write for our new literature describing it.



ELLIOT WOODWORKER. (Made in Canada)

RECOGNIZING the labor and time-saving features of the Elliot Woodworker, the Imperial Munitions Board have ordered a number of these machines.

The United States Government already have Elliot Woodworkers at Norfolk, Brooklyn, Newport Navy Yards and the West Point Military Academy.

250 of these machines have been sold in Toronto, and the same number in Detroit alone.

This is a fine record for a Canadian machine.

Elliot Woodworker Co.,

PHONE ADELAIDE 2293

111 ADELAIDE STREET WEST
TORONTO

The Door Carrier System



Makes your dry-kiln doors steam-tight and saves time, heat, trouble and money.

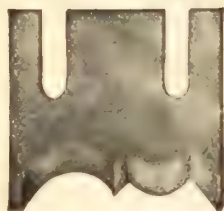
Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbeted joint, where it is held steam-tight by its own weight. Applicable to old or new kilns.

Ask for catalogue.

**DRY KILN
DOOR CARRIER CO.**

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INDIANAPOLIS, IND.

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Manufacture the Best
PLANER KNIVES

and **CUTTERS**

OF ALL DESCRIPTION

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AND FURNITURE MANUFACTURER,
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Date.....191

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ONE of the strongest talking points in favor of Carborundum Brand Garnet Paper and Cloth is flexibility.

Flexibility really means durability.

A flexible Garnet paper or cloth lasts longer. There is no cracking or peeling even when worked over angles or corners.

The grains get a better chance to cut more freely, therefore the product produces more. Many years of knowing how, has built into Carborundum Brand Garnet Products that vital quality of flexibility.

It comes from painstaking effort, from a most improved method of manufacture.

Then, too, it must be remembered that every bit of paper and cloth is of the highest quality—that the Garnet grain we use is clean, pure, sharp and uniform—that the glue is of the highest grade.

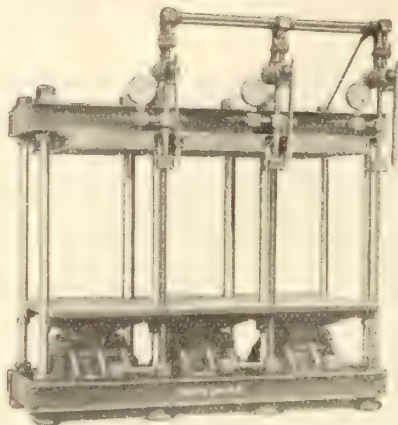
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Will Make Good Sanders Better Sanders

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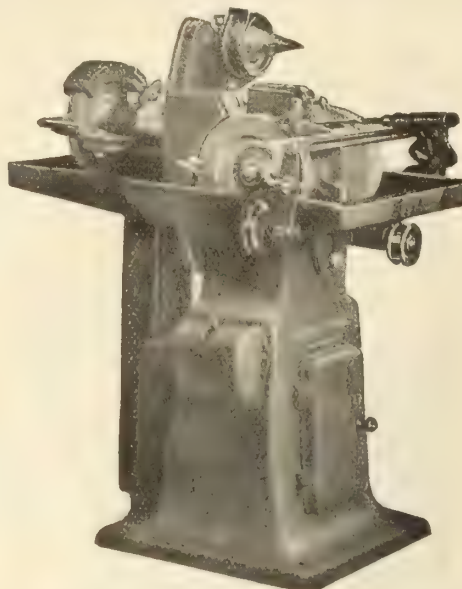
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**They Saved
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Stop That Waste!

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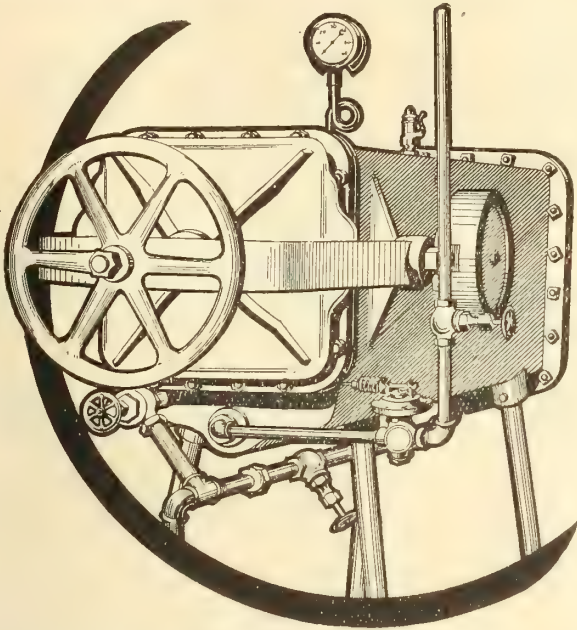
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which we guarantee will save you

50% Less Breakage

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Perfection Wood Steaming Retort Co.

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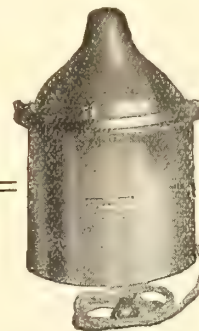
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THIRD—They give three degrees of constant, even heat which insures proper mixing and density. This one feature alone will soon demonstrate its desirability in preventing joints from coming apart.

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Yates Machine Co., P. B., Hamilton, Ont.

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Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

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Garlock-Walker Machinery Co., Toronto, Ont.
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DUST SEPARATORS

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Toronto Blower Company, Toronto, Ont.

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Garlock-Walker Machinery Co., Toronto, Ont.
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Yates Machine Co., P. B., Hamilton, Ont.

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Yates Machine Co., P. B., Hamilton, Ont.

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"Canadian Woodworker" Buyers' Directory—Continued

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Preston Woodworking Machinery Company, Preston, Ont.
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Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

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Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.

MACHINE KNIVES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

METALINE NAILS

Dominion Tack & Nail Co., Galt, Ont.

MITRE SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

MOULDERS

Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Vonnegut Machinery Co., Indianapolis, Ind.

MULTIPLE BORING MACHINES

Root Company, B. M., York, Pa.

MULTIPLE BOXING MACHINES

Fay & Egan Co., J. A., Cincinnati, Ohio.
Nash, J. M., Milwaukee, Wis.

OIL STONE GRINDERS

Mummert-Dixon Co., Hanover, Pa.

PANELS

Hay & Co., Montreal, Woodstock, Ont.
Wactjen & Co., George L., Milwaukee, Wis.

PATTERN SHOP MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

PERIOD TURNINGS

Walter & Sons, J., Kitchener, Ont.

PLANERS

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

PLANING MILL MACHINERY

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PRESSES (Veneer)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Co., Wm. R., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

PULLEYS

Bernard Industrial Co., A., Fortierville, Que.

RESAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RIM AND FELLOE MACHINERY

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.

RIP SAWING MACHINES

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RUBBING MACHINES

DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.
Paasche Air Brush Co., Chicago, Ill.

SAFETY DEVICES

Cowan & Company, Galt, Ont.

SANDERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

Band Resaw 76

Convenient and Access-
able Adjustments.

Built for Service.

Moderately Priced.

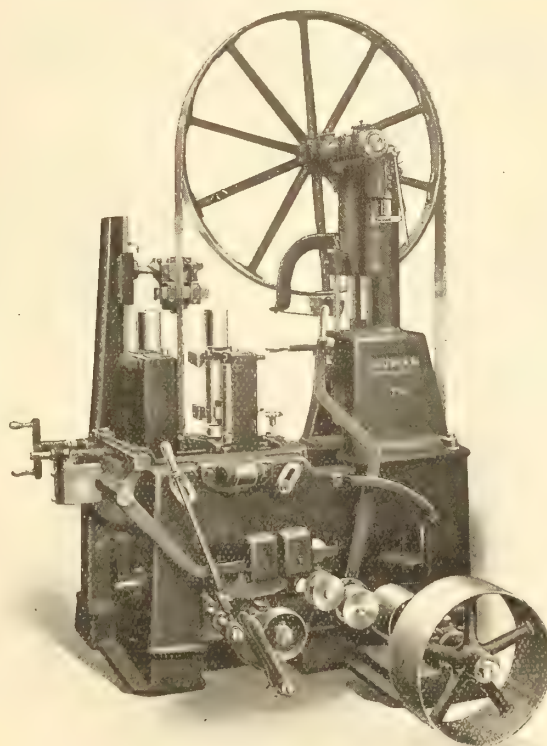
48" Wheels

Tilting Rolls

Capacity:

$\frac{1}{8}$ " to 8" Horizontally.

26" Vertically.



Woodworking Machinery

for

Planing Mills,
Sash and Door Factories,
Box Factories,
Furniture Factories
Carriage and Wagon
Factories,
Ship Yards, etc.

*Illustrations and
Specifications
on request.*

COWAN & COMPANY OF GALT LIMITED
GALT, ONTARIO

"Maple Leaf" Saws

We know we make good saws and try to make the best

We manufacture—

Bands

all kinds of

Special Circular Saws

for Special work

Cross Cut Saws

Gang Saws

Grooving Saws

Chamfering Saws

Concave Saws

etc., etc.

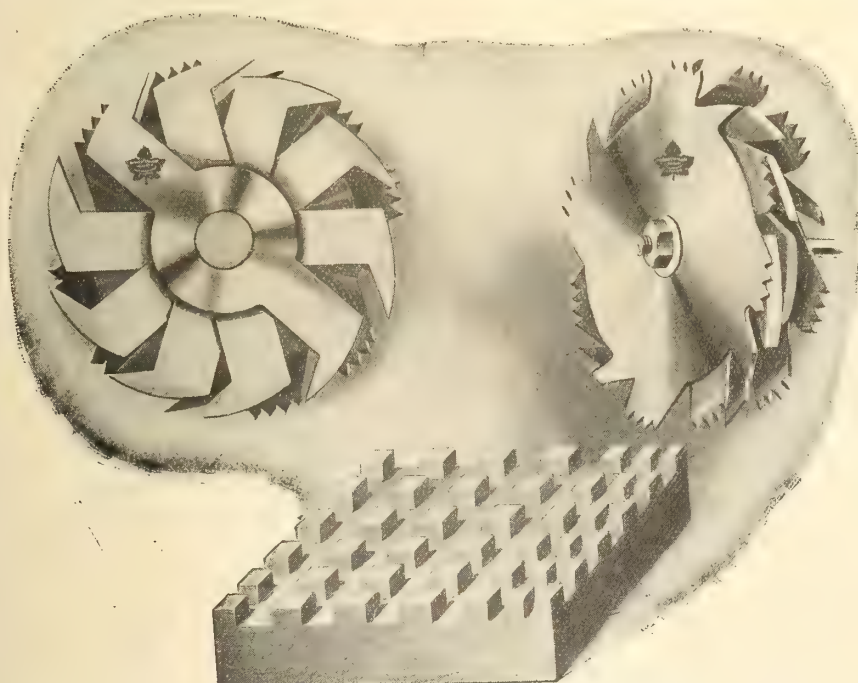
EVERY SAW GUARANTEED

Write for Catalogue

**Shurly-Dietrich
Co., Limited**

GALT — CANADA

306-308 Wellington St., Ottawa, Ont.
1642 Pandora St., Vancouver, B.C.



"Canadian Woodworker" Buyers' Directory—Continued

SASH, DOOR & BLIND MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAWS

Atkins & Co., E. C., Indianapolis, Ind.
Radcliff Saw Mfg. Company, Toronto, Ont.
Shurly-Dietrich, Ltd., Galt, Ont.
Simonds Canada Saw Co., Montreal, Que.

SAW SWAGES

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.

SAW TABLES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SCRAPING MACHINES

Canada Machinery Corporation, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.

SCREW DRIVING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

SCROLL SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SECOND-HAND MACHINERY

Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

SHAPERS

American Woodworking Machinery Company, Rochester, N.Y.
Cowan & Company, Galt, Ont.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS

Canadian Blower & Forge Co., Kitchener, Ont.
Sheldons Limited, Galt, Ont.
Toronto Blower Company, Toronto, Ont.

SHOOK BUNDLER

Neilson & Company, J. L., Winnipeg, Man.

SPRING MATTRESS FRAMES

Newman Sons, J. P., Warton, Ont.

SPRINGS FOR UPHOLSTERY

Weber, Knapp Co., Jamestown, N.Y.

STAINS

Ault & Wiborg, Toronto, Ont.
Marietta Paint & Color Co., Marietta, Ohio.

SINGLE SPINDLE BOXING MACHINES

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.

STAVE SAWING MACHINE

Whitney & Son, Baxter D., Winchendon, Mass.

SURFACERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES

Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES

Walter & Company, B., Wabash, Ind.

TACKS AND NAILS

Canada Tack & Nail Co., Hamilton, Ont.
Dominion Tack & Nail Co., Galt, Ont.

TEMPERATURE REGULATORS

Canadian Powers Regulator Co., Toronto, Ont.

TENONING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TIME CLOCKS

International Business Machines Co., Toronto, Ont.

TRIMMERS

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRUCKS

Sheldons Limited, Galt, Ont.
National Dry Kiln Co., Indianapolis, Ind.

UPHOLSTERER'S FLOCK AND BATTING

Bauers Limited, Waterloo, Ont.

VARNISHES

Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg Company, Toronto, Ont.
Jamestown Wood Finishing Co., Jamestown, N.Y.
Penfound Varnish Co., Toronto, Ont.

VARNISH SPRAYERS

DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

VENEERS

Bury & Company, Robert, Toronto, Ont.
Central Lumber Co., Indianapolis, Ind.
Christman Veneer & Lumber Co., St. Louis, Mo.
Dean Spicker Company, Chicago, Ill.
Empire Veneer Company, Chicago, Ill.
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Geo. Kersley, Montreal, Que.
Korn-Conkling Co., Memphis, Tenn.
Long-Knight Lumber Co., Indianapolis, Ind.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Nartzik, J. J., Chicago, Ill.
National Veneer & Lumber Co., Indianapolis, Ind.
North Vernon Lumber Co., North Vernon, Ind.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Roberts & Co., John N., New Albany, Ind.
Southern Veneer Mfg. Co., Louisville, Ky.
Thompson Veneer Co., W. T., Edinburgh, Ind.
Toronto Veneer Company, Toronto, Ont.
Veneer Manufacturers Co., Chicago, Ill.
Waetjen & Co., George L., Milwaukee, Wis.

VEENER TAPE

Ideal Coated Paper Co., Brookfield, Mass.

VENTILATING APPARATUS

Canadian Blower & Forge Co., Kitchener, Ont.
Sheldons Limited, Galt, Ont.

VEENER JOINTERS

Garlock-Walker Machinery Co., Toronto, Ont.

VEENER MACHINERY

Garlock-Walker Machinery Co., Toronto, Ont.

VEENER PRESSES (Hand and Power)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Company, Wm. R., Toronto, Ont.

VISES

Fay & Egan Co., J. A., Cincinnati, Ohio.

WOOD FINISHES

Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg, Toronto, Ont.
Jamestown Wood Finishing Co., Jamestown, N.Y.
Penfound Varnish Co., Toronto, Ont.

WOOD SCREWS

Robertson Mfg. Co., P. L., Milton, Ont.

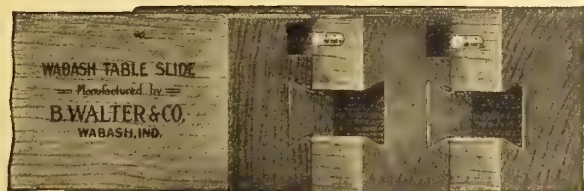
WOOD TURNING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Mattison Machine Works, Rockford, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES

Fay & Egan Co., J. A., Cincinnati, Ohio.

THE SLIDE IS THE HEART OF YOUR EXTENSION TABLE



*If the Slide Does Not Work Properly
Your Whole Table is Condemned*

**Wabash Slides insure
Satisfied Customers**

SLIDE MAKING is a SPECIALTY BUSINESS

We can Furnish Better Slides for Less Cost

**Eliminate Slide Troubles by using
WABASH SLIDES**

MADE BY

B. Walter & Company

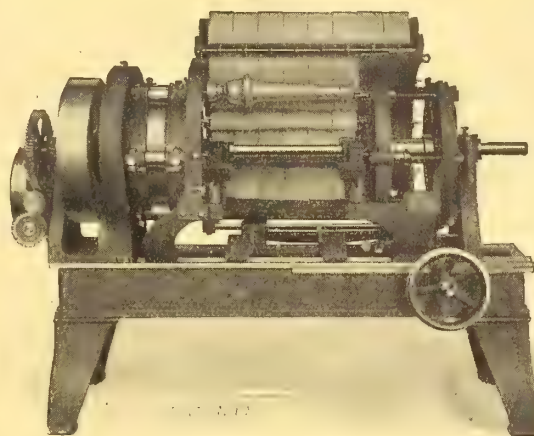
Edsall St., Wabash, Ind.

Canadian Representative:

A. B. CAYA, 28 King St. East, Kitchener, Ont.

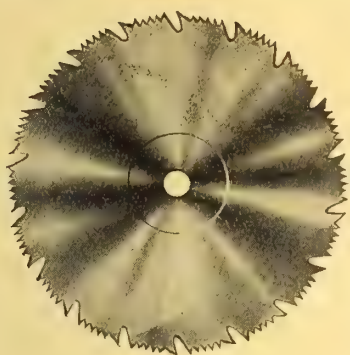
Don't Ask a Man

to do the work of a machine



The No. 10 NASH SANDER for furniture turnings can improve your product 100 per cent. and save you upwards of \$5 a day. Why waste man-power on that class of work?

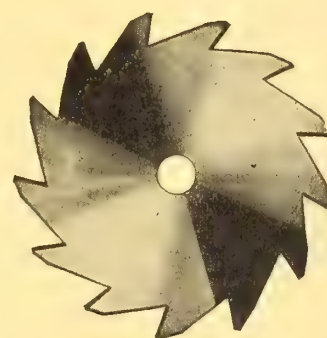
J. M. NASH, Milwaukee, Wis.



ATKINS

STERLING QUALITY

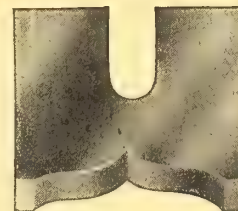
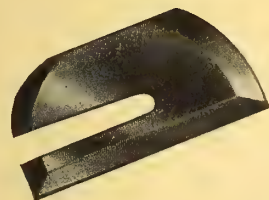
SAWS and KNIVES



The best steel—the most careful and accurate workmanship—the equipment that will eventually save you money.

Atkins Sterling Quality Saws and Knives are proving their superiority by competitive tests in the largest plants of the country. We welcome your most careful investigation, as we know the satisfaction that will result.

Write to-day for our Knife Booklet "CW"
and Pattern Template Paper.



E. C. ATKINS & CO.

Makers of Sterling Saws

Factory—HAMILTON, Ont.

Vancouver Branch—109 Powell Street



Use This Method For Sanding Straight Or Curved Edges

This type of sander is of exceptional value for finishing curved edge-work of small radius, as well as ornamental square and octagonal turnings.

Work of this nature requires accuracy and necessitates the employment of stationary, sharp-nosed forms. The use of these forms is valueless if the machine itself vibrates or chatters. And that is why the Mattison "176" Oscillating Belt Sander is built like a machine tool—heavy and rigid. This

construction insures smooth, even travel to the sandbelt.

The sharp-nosed form gets the abrasive into the smallest curves and does work that can only be done otherwise by hand. The oscillating motion of the sandbelt prevents scratch marks. No other method compares with the Mattison Oscillating

Belt Sander in range of work, accuracy and quality of finish or capacity. Your machine room is incomplete without it.

MATTISON
176
Oscillating Belt Sander
For Edge and Shaped Work

Illustrated Circular No. 176 Covers the Details—Send for it.

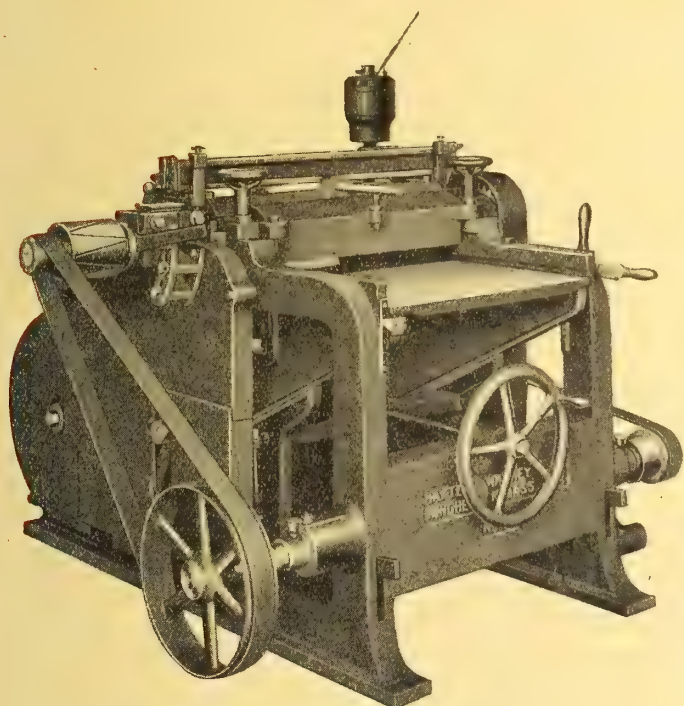
Mattison Machine Works, Rockford, Illinois, U. S. A.

CANADIAN WOODWORKER

and
Furniture Manufacturer

THE WHITNEY Improved Single Planer

has special features that appeal to every woodworker, such as the



30" No 32 Single Planer—Round Head Cutter and Motor Grinder

- RIGID FRAME with ample weight of metal.
- BED raised and lowered on Solid Wedges operated on wide tracks.
- HARDENED CENTRE TABLE made extra thick.
- AUTOMATIC CHIPBREAKER working concentric with the cutter head.
- SIDE CLAMP CUTTER HEAD BOXES easily detached.
- CUTTER HEAD with long bearings of large diameter.
- REMOVABLE BABBITTED FEED SHAFT BOXES.
- SECTIONAL FEED ROLLS to handle narrow and uneven stock.
- MACHINE CUT GEARS.

These are but a few of the features that enable the Whitney Planer to do superior surfacing at the lowest cost.

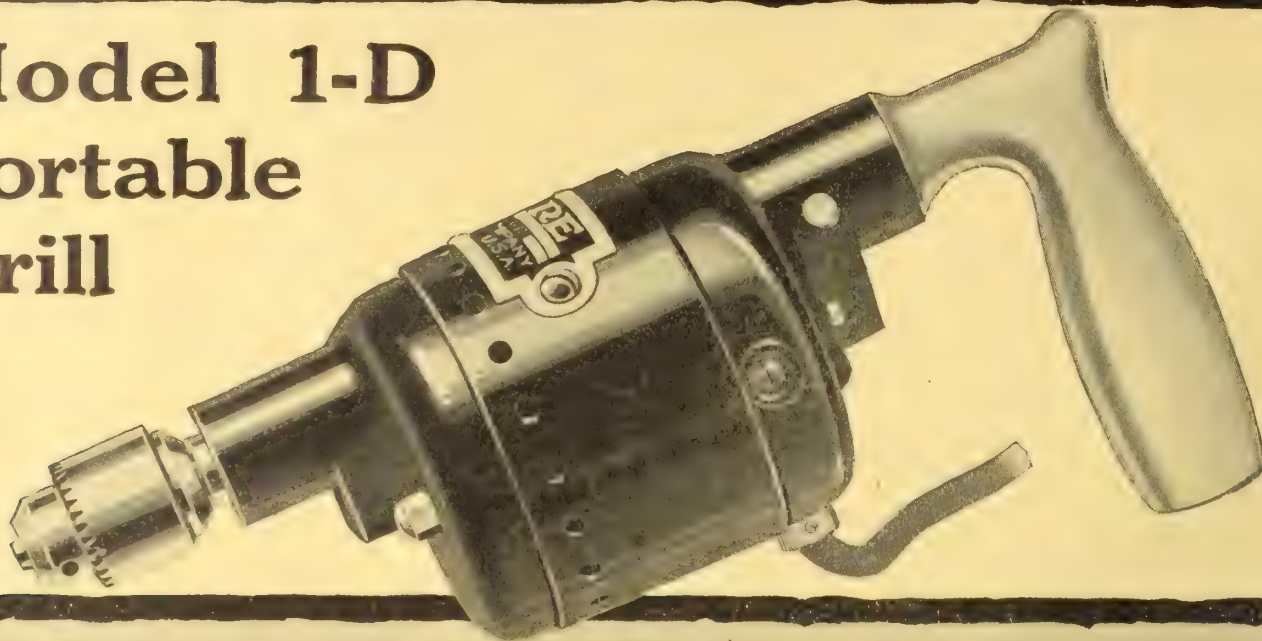
These machines can be furnished with two or four-knife Square Cutter Heads or four-knife Round Cutter Heads, Flexible or Sectional Chip-breaker and Motor-driven Grinders and Devices.

Write us for further information about this machine.

BAXTER D. WHITNEY & SON, Inc., Winchendon, Mass.

H. W. Petrie, Ltd., Toronto, Ontario, Agents for Ontario

Model 1-D Portable Drill



HANDY—ECONOMICAL—EFFICIENT

Specifications:

Length—10 inches.

Weight—13½ pounds.

Capacity—Steel, 0 to 1½"; Wood and alloys, 0 to 1½".

Motor—Universal, on either direct or alternating current.

Diameter of Motor—3½ inches.

Spindle—Offset from center 3/8".

Helical Gears.

Aluminum Handle.

Complete with 10-ft. cord, plug, switch and chuck.

Jacob's Chucks used as a regular equipment.

FOR speed in drilling and counter-sinking small holes, this tool is just what you need. It can be used on any kind of material—steel, iron, brass, aluminum or wood—and gives lasting service.

If your dealer cannot supply you with the Model 1-D, tell us about your requirements.

Wisconsin Electric Company
7110 Sixteenth Street, Racine, Wisconsin, U. S. A.

DUMORE GEARED ELECTRIC DRILLS

AMERICAN WOOD WORKING MACHINERY CO.

ROCHESTER, N. Y.

SALES OFFICE FOR BRITISH COLUMBIA, PORTLAND OREGON
AGENTS FOR THE REST OF CANADA GARLOCK-WALKER MACHINERY CO., TORONTO
AGENTS FOR GREAT BRITAIN THE PROJECTILE CO., LONDON

FIRST IN QUALITY

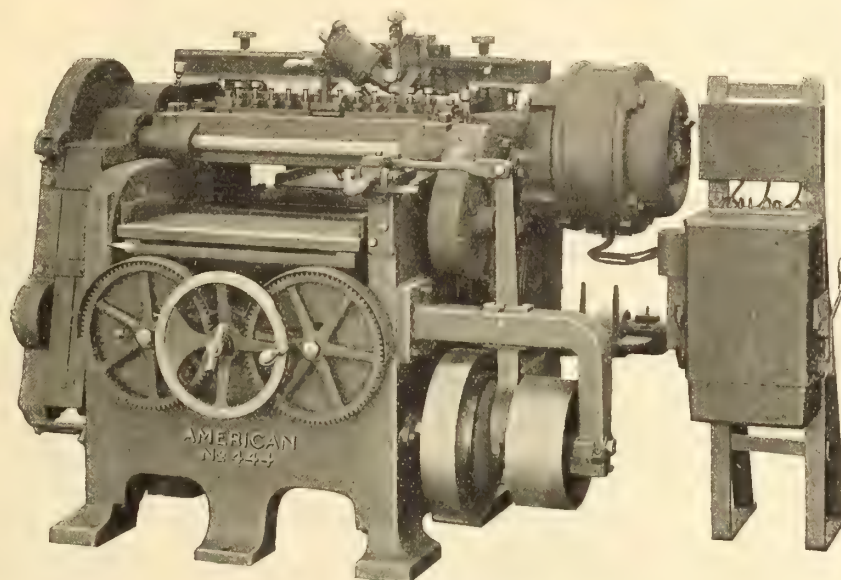
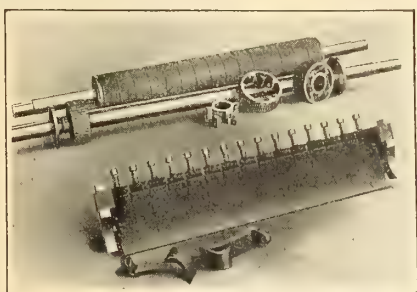
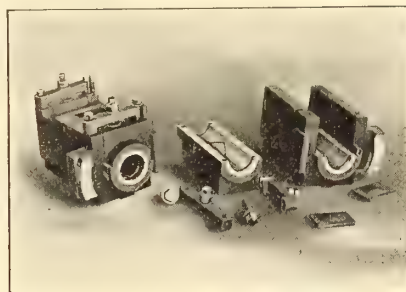


Figure 7741

American No. 444 Finishing Planer



Sectional Roll and
Chip Breaker



Sectional Clamp Boxes
(Renewable and Interchangeable)

CANADIAN



SALES AGENTS

Garlock-Walker Machinery Company

32 Front Street West, TORONTO, ONT.

Limited

Toronto

Montreal

Winnipeg

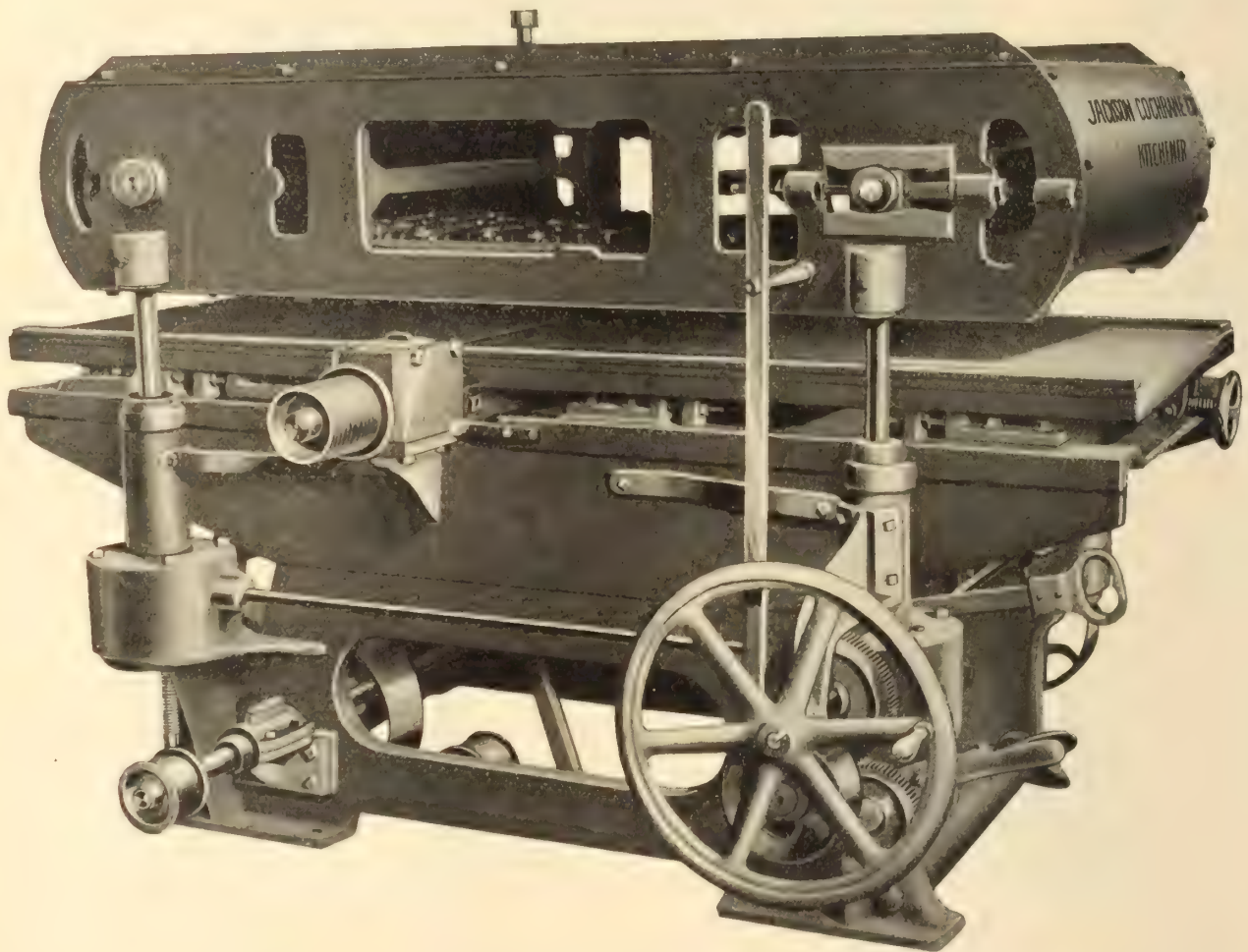
The Herzog Self-Feed Jointer

means

Increased Production
Small Floor Space

Simplicity of Operation
Safety to Employees

Does Four Times the Work of the Hand Jointer

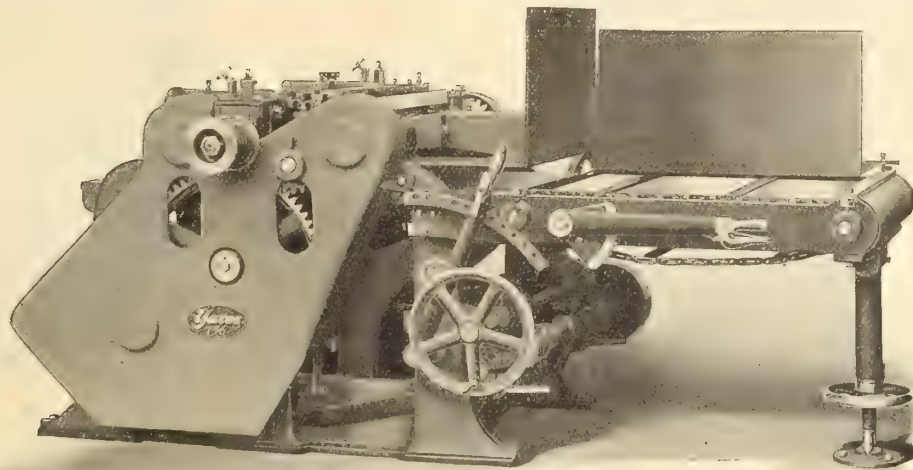


Our No. 34 Herzog Jointer, illustrated above, is one of the most efficient machines on the market to-day. It is appreciated by the manufacturer and employees alike, because, while it will produce from three to five times as much work as the hand jointer, it does not require skilled operators, but eliminates the danger so common to other makes. It can be operated by two boys. It will handle stock varying in width from 1 inch to the full width of the jointer, will feed fast or slow, takes only one-fourth the floor space of hand jointers, and requires only one-fifth of the sharpening of the knives. It is fitted with power feed raising and lowering attachment, with cylinder double belted and driven from both ends.

If interested in reducing your costs, write us.

Jackson, Cochrane & Company
KITCHENER - CANADA

A Simple Single Surfacers



"The Invariable Choice of the Man Who Knows."



No. 156 Cabinet Single Surfacers

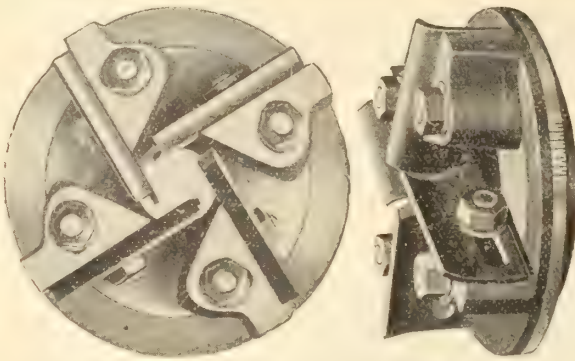
SIMPLICITY and strength are two outstanding features of the No. 156. It is easy to operate and is built to last beyond your expectations. Built with or without motor drive and hopper feed. Equipped with Yates head and knives, it will give a super-finish to cabinet, furniture or box stock.

Write for our illustrated No. 156 circular. Of interest to all users of woodworking machines. Sent free on request.



P. B. Yates Machine Co. Ltd.

HAMILTON, ONT. CANADA
U.S. PLANT—BELOIT, WIS.

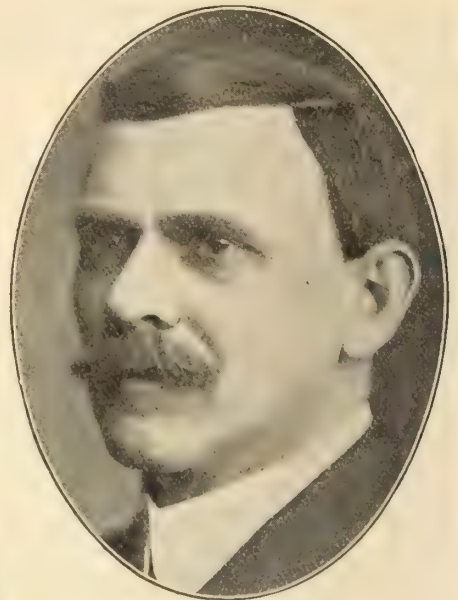
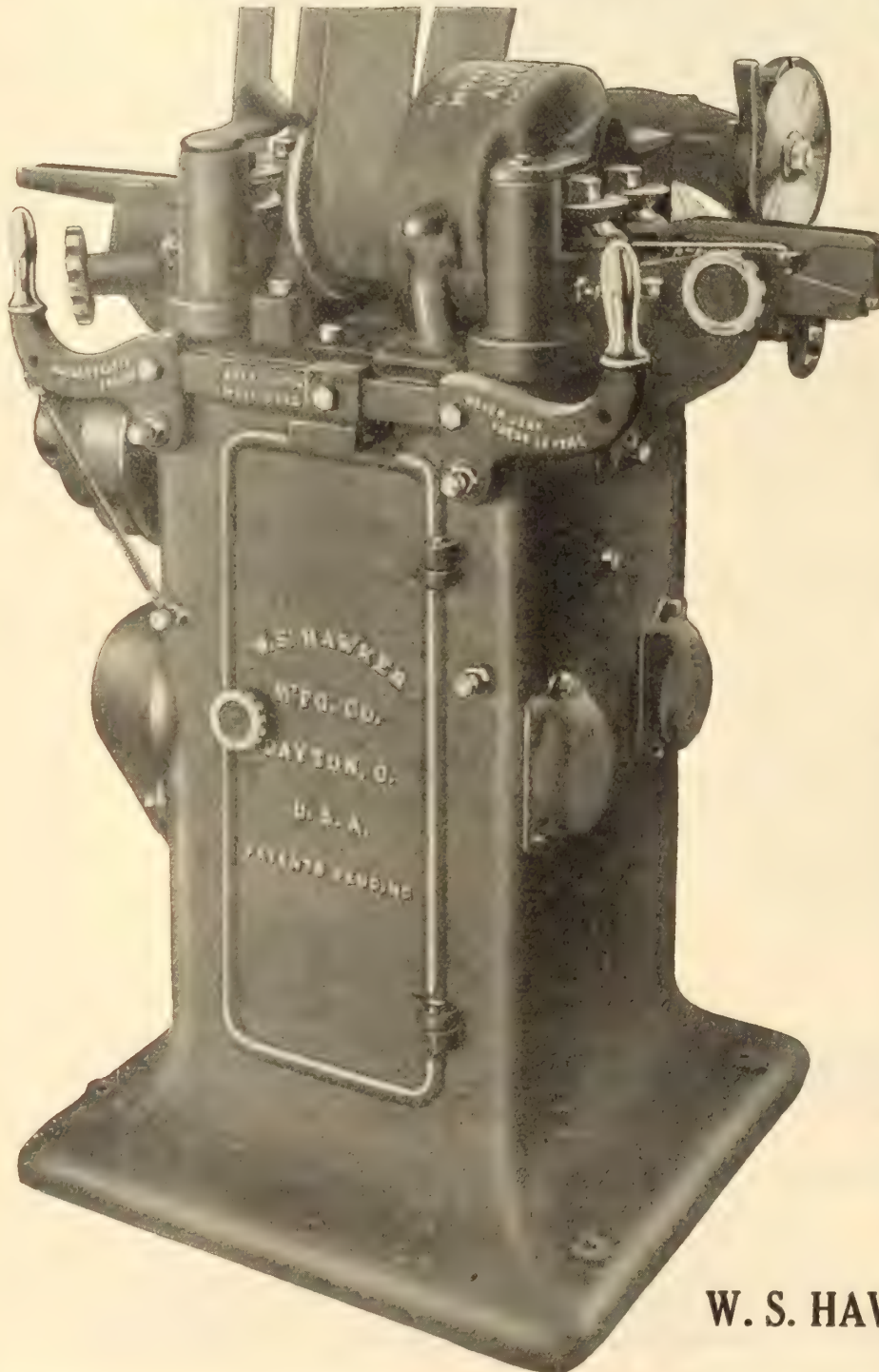


UNIVERSAL ADJUSTABLE CUTTER HEAD Patented.
Infringements (maker or user) will be vigorously prosecuted.

Two Heads

that have put
100% more profit
in the production
of Dowel Stock.

FOR SHIP TREENAILS



W. S. HAWKER.

Inventor and Designer of the World's most
efficient Tubular Turning Machinery

THE Money Maker Adjustable Rod and Dowel Machine

The machine that is sent under a guarantee
to show you a gain of from 100 to 400 per cent.
before you buy it.

The improved dowel machine that 90 per
cent. of the largest and oldest machinery build-
ers and dealers now endorse and recommend in
preference to the solid chuck machines they
themselves previously built.

One cutter head turns from 1/4 in. to 2 in.
diameter.

Turns hard or soft wood equally well.

Handles heavy, oversized squares.

No choking of the cutter head.

Smooth stock.

Accurate sizes.

Works stock as short as five inches.

Rolls automatically centre variations in
squares.

Machines built to turn from 1/8 to 6 in.

We want to hear from every user of a solid
chuck dowel machine.

We can save you from one dollar out of
every two, to four out of every five, that the
operation of solid chuck machines costs you.

Engagements for competitive test solicited.

Formal orders not solicited. All sales made
after demonstration.

The only question is, are you willing to cut
cost of your dowel turning to one-half or one-
third of what it costs with any make of solid
chuck machine?

Machine delivers the goods before you buy.

State conditions of stock closely.

Special conditions require special equipment.

W. S. HAWKER MFG. COMPANY
DAYTON, OHIO.

The "Shimer Limited" Expansion Head

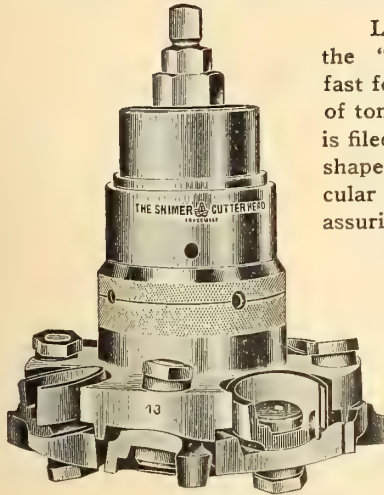


Fig. 627

Let us draw your attention to the advantages of using the "SHIMER CUTTER HEAD" for general Mill and fast feed Planer work. The Cutter is turned to cut the shape of tongue and groove desired, so that to sharpen the cutter it is filed or ground on its face, guaranteeing the user the same shape of cut during the life of the cutter. The bit being circular has from $3\frac{1}{2}$ in. to 5 in. cutting length to the cutter, assuring long wearing life to the cutters.

Note that the cutter, being fastened to a concave seat on a compound angle, assures the user of the proper clearance of cutters, consequently they never burn.

These heads are fitted with or without the Self-Centering Sleeve, and made Expansion or Solid, to suit the customer's wishes.

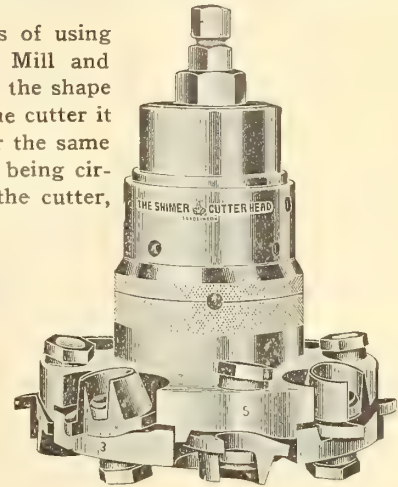


Fig. 268

Shimer Heads have been in use for sixty years, and their reliability and reputation have spoken for them in the past. Let us know your wants and we will guarantee their reliability at the present.

SHIMER CUTTER HEAD CO. OF CANADA, LIMITED

Successors to Samuel J. Shimer & Sons, Inc.

GALT, ONTARIO

Special "Beaver" Dado

Our "Beaver" Dado head is composed of two special bevel wing grover saws $\frac{1}{8}$ in. thick on outsides. The inside cutters being made with several teeth on each end and swaged for clearance will not chop or "break out." They are $\frac{1}{8}$ in. thick.



Specially designed to cut with or across the grain, leaving a smooth, clean surface. Indispensable in the manufacture of furniture and boxes.

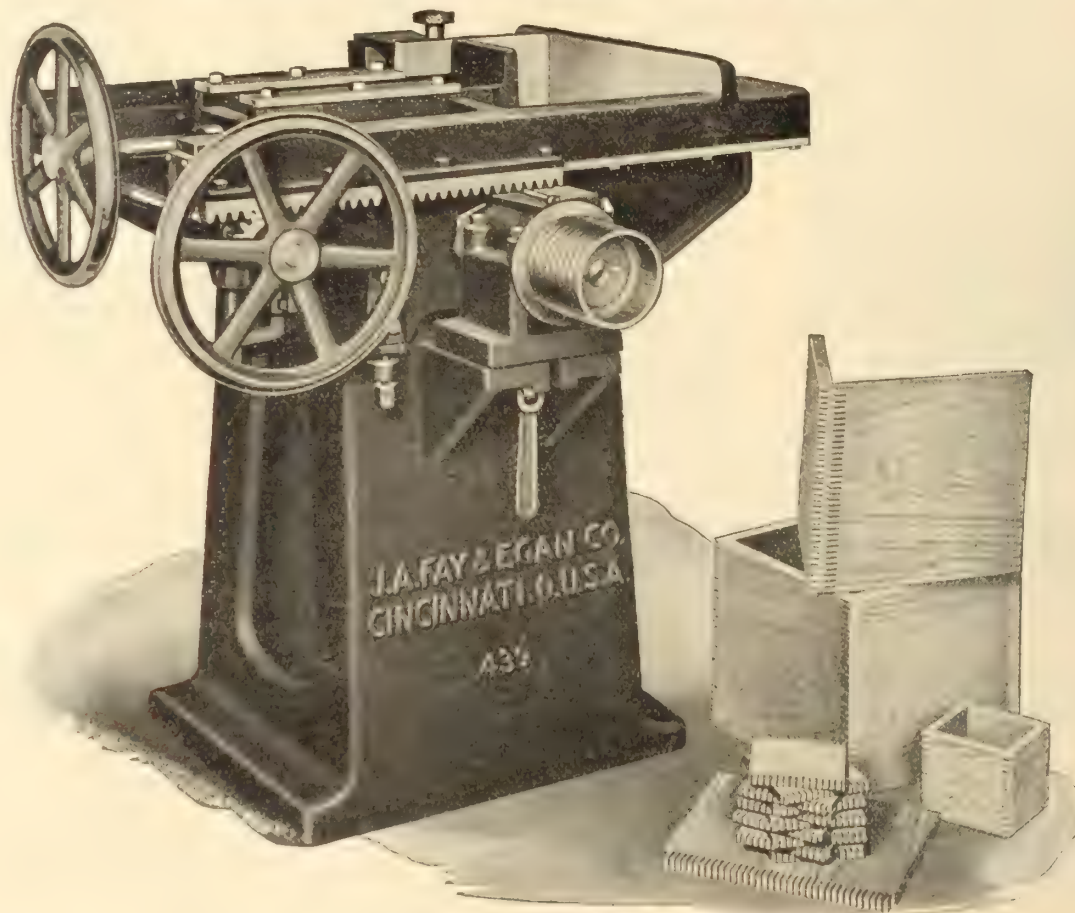
Radcliff Saw Manufacturing Company, Limited

Cable Address:
"RADSAW, TORONTO"

1550 Dundas Street St. West, TORONTO

Agents for L. & I. J. White Company Machine Knives

There is Always a Demand for Lock Corner Boxes



No. 439 "Lightning" Single End Lock Corner Machine

The large investment heretofore required for a machine for producing this class of work, forced many Box Makers to abandon their intention of manufacturing this type of boxes.

This obstacle has been overcome in the No. 439 "Lightning" Single End Lock Corner Machine.

This machine was designed for the rapid production of accurately matched lock corners, and the price places it within reach of all manufacturers who desire to get into this field.

Makes all cuts of uniform depths. Works up to 14-in. wide and 10-in. thick—any length. Change cutters without disturbing adjustment.

Inexpensive

Prompt Deliveries

Write for Bulletin Y-6

J. A. Fay & Egan Company

153-173 W. Front St.

CINCINNATI, OHIO.

Machinery for Turning Wood Products of Special Shapes

To produce in quantity at a cost low enough to meet competitive prices—to produce in quality a product at least equal to any other in its field, are aims of every manufacturer of wood turnings. Such aims are best met with Defiance automatic and semi-automatic lathes which are serving owners the world over with big output in accurately turned work at low cost.

Defiance Automatic Wood Turning Lathes

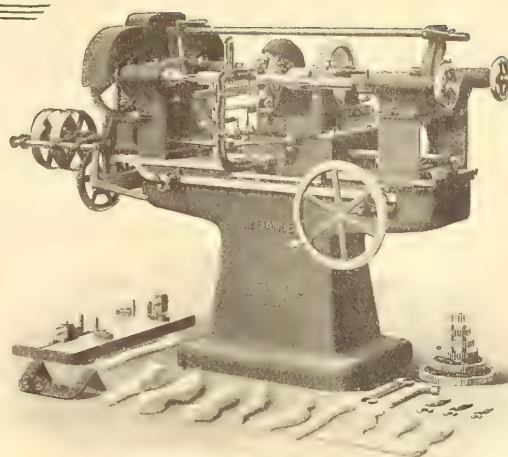
are especially adapted to turning irregular shapes, such as aeroplane propellers and struts, gun stocks, artificial limbs, saddle-trees, golf stick heads, hobby horses, spokes, etc.; variety turnings, such as table legs, balusters, baseball bats, croquet mallets, Indian clubs, dumbbells, ten-pins, shell plugs, treenails, etc.; handles for small tools, brushes, hammers, hatchets, picks, axes, mauls, shovels, etc.; long handles for brooms, rakes, hoes, forks, etc.

Illustrated and descriptive matter on your requirements in wood turning lathes will be mailed on application.

THE DEFIANCE MACHINE WORKS
DEFIANCE, OHIO, U.S.A.

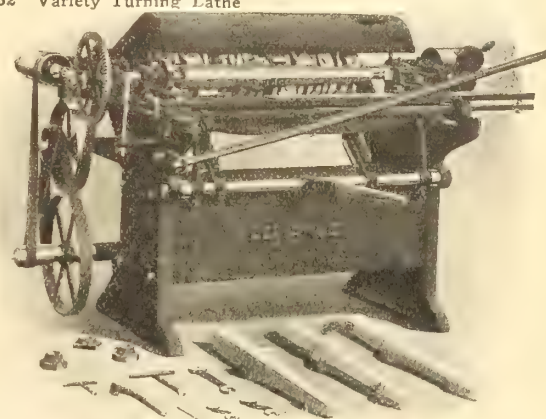
New York

London



32" Variety Turning Lathe

18" Copying Lathe



You Have Paid for an Installation of **Chapman Double Ball Bearings**

in Your Factory over and over again, BUT—

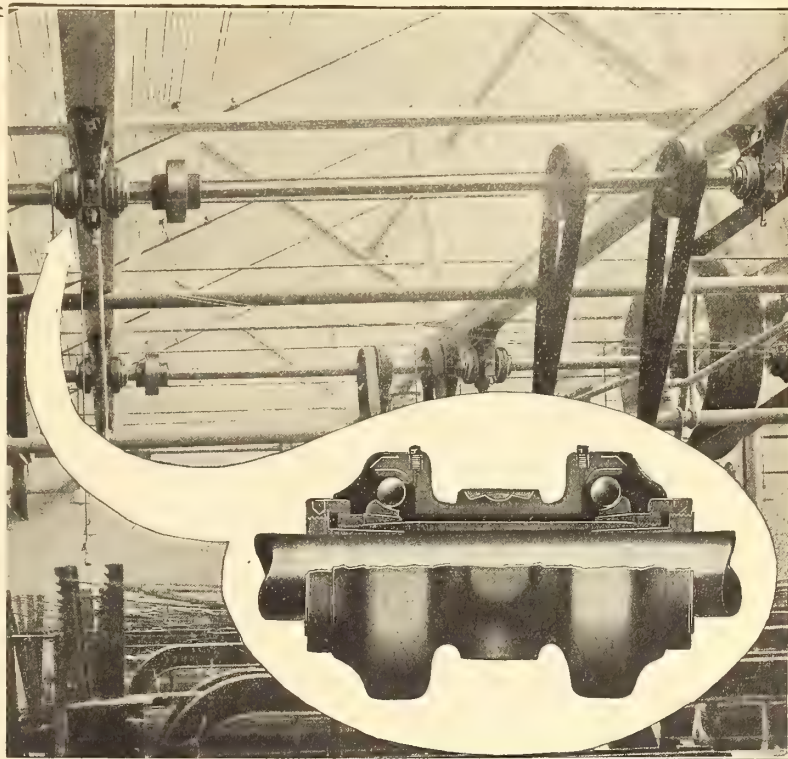
HAVE YOU GOT THEM?

Ordinary line shafting wastes 15 per cent. to 60 per cent. of power.

Line shafting equipped with Chapman Double Ball Bearings will eliminate about 75 per cent. of the friction, thus averaging a total saving of from 15 per cent. to 30 per cent.

Chapman Double Ball Bearings fit any adjustable hanger and require oiling and attention only once a year. No extra equipment required to install.

Write to-day for full particulars



The Chapman Double Ball Bearing Co. of Canada, Limited
Toronto 339-351 Sorauren Ave. **Ontario**

American Branch: The Transmission Ball Bearing Co., Inc., 32 Wells St., Buffalo, N.Y.

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A Few New and Refitted Woodworking Machines

from our large stock of up-to-date machinery. Write us for prices and information on any machines not listed that you may require.

CHAIN MORTISERS

Stock No. 44911—Used M-256 Cowan Chain Mortiser with 5/16 in. bar chain and sprocket. No sharpener.
 Stock No. 44566—Practically new M-255 Cowan Chain Mortiser with 5/16 in. chain, bar and sprocket with 1 3/4 in. sprocket extra.
 Stock No. 44568—Practically new M-255 Cowan Chain Mortiser with 3/8 in. chain bar and sprocket and 5/16 in. chain bar and sprocket.
 Stock No. 44567—Practically new M-255 Cowan Chain Mortiser with 3/8 in. chain bar and sprocket and 5/16 in. chain bar and sprocket.

SINGLE SURFACE PLANERS

Stock No. 32959—New 24 x 7 Eclipse Single Surface Planer, top and bottom rolls driven. Feed rolls are 3 1/2 in. diameter, 13 1/2 in. apart.
 Stock No. 31317—New Preston 26 x 10 Single Surface Planer with divided rolls. Feed rolls are 16 in. apart.
 Stock No. 31318—As above.
 Stock No. 44620—Used 24 x 7 Eclipse Planer, Matcher and Moulder, will match 12 in. wide.
 Stock No.—Used 24 x 7 Eclipse Single Surface Planer.
 Stock No. 33111—New 24 x 7 Clark & Demill Single Surface Planer, cylinder driven at both ends. Feed rolls 4 1/2 in. dia., 19 in. apart, all driven.
 Stock No. 29278—Used 30 x 8 McGregor-

Gourlay Single Surface Planer, with divided rolls and chip breaker. Cylinder is driven at both ends. Feed rolls 6 in. dia., 17 in. apart. This is a good heavy type cabinet planer.

Stock No. 31758—Used 24 x 6 Whitney Single Surface Planer, cylinder driven at both ends. Feed rolls 4 1/2 in. dia., 12 1/2 in. apart, all driven.

Stock No. 44913—Used 28 x 6 Whitney type Single Surface Planer, cylinder driven at both ends. Rolls 4 1/4 in. dia., 13 in. apart, all driven.

Stock No. 44846—Second-hand McGregor-Gourlay 24 x 7 Pony Planer, top rolls only are driven. Rolls are 3 in. dia., 13 in. apart. Machine is now manufactured by the C. M. C. Bottom rolls 5 in. dia., and machine will feed 25 ft. per minute. Tight and loose pulleys are 8 1/2 in. x 4 1/2 in., run 1000 r.p.m.

CUT OFF SAWS

Stock No. 42306—Used Greenlee Automatic Cut-Off Saw, travelling saw carriage operated by foot lever and friction, 36 in. dia. saw, cuts 13 1/2 in. above table.

Stock No. 44798—Used McGregor-Gourlay-Dimension Rip and Cross Cut Saw Table. Will carry 18 in. saws, ripping 13 in. wide, with rip and cross cut fences, raising and lowering arbor, tilting table 48 in. x 36 in.

Stock No. 42782—New Beach Iron Frame Rip Saw with wooden table, raising and lowering mandrel.

Stock No. 42795-41—New No. 125 Preston Variety Tilting Saw Table.

Stock No. 44733—New No. 127 Preston Variety Tilting Saw Table.

Stock No. 42826—New No. 4 Dodds Variety Tilting Saw Table.

Stock No. 42784—New No. 6 Dodds Variety Tilting Saw Table.

Stock No. 44685—American Lightning Cut-off Saw. Machine is self contained. Size of table 26 x 31 1/2 in.

SASH AND DOOR RELISHERS

Stock No. 44529—M-225 Cowan Sash & Door Relisher and Mortiser.

Stock No. 40964—Jackson Cochrane Door Relisher.

Stock No. 40968—M-234 Cowan Sash Relisher and Mortiser.

BAND SAWS

Stock No. 44627—Used Genuine Westside 36 in. Band Saw, with tilting table, good up-to-date machine; first class condition.

Stock No. 44590—New 36 in. Preston Band Saw with wire guard on top wheel, iron enclosing doors on bottom wheel.

Stock No. 44653—Used 36 in. Preston Band Saw with wire guard on top wheel and iron enclosing doors on bottom wheel arranged for motor drive.

Stock No. 44913—Used 36 in. Defiance Band Saw with re-sawing attachment, will carry 1 1/2 in. saw.

The A. R. Williams Machinery Co., Limited
 TORONTO, CANADA

"Treat your machine
as a living friend"

SAVE

In Your Veneer Room

50% of Your Present Labor Cost

Four Men to do the Work of Eight!

Keen competition is ahead of you.

To compete **successfully** your equipment should include :

A Black Bros." Veneer Taping Machine

Let us place one with you on trial and prove—*That it will cut your Labor Cost in two.*

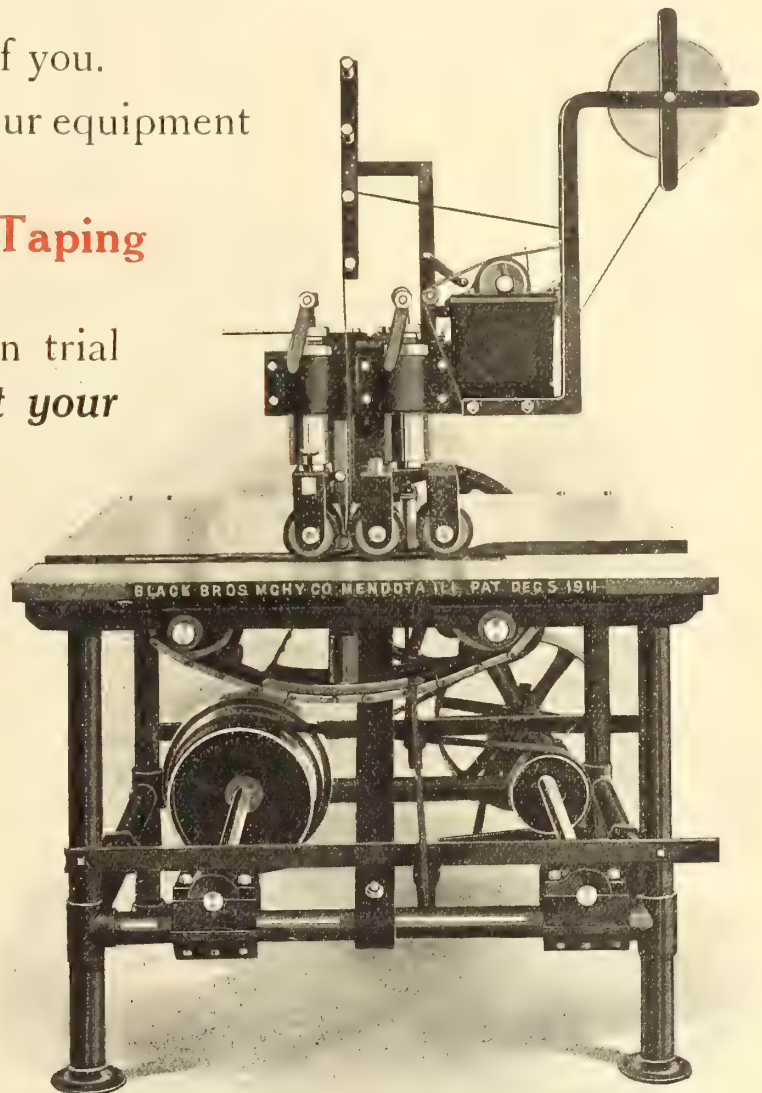
This machine will tape together all kinds of Veneer, no matter whether it be thick or thin, handling both kinds equally well.

It will use the ordinary gum tape, or it will use plain paper tape and put on its own gum or glue just before it is laid.

Built in two sizes—24 in. and 36 in.

**Ask for prices and
particulars**

WE CONTROL THE CANADIAN PATENT
ON THIS MACHINE.



"Black Bros." Patented Veneer Taping Machine

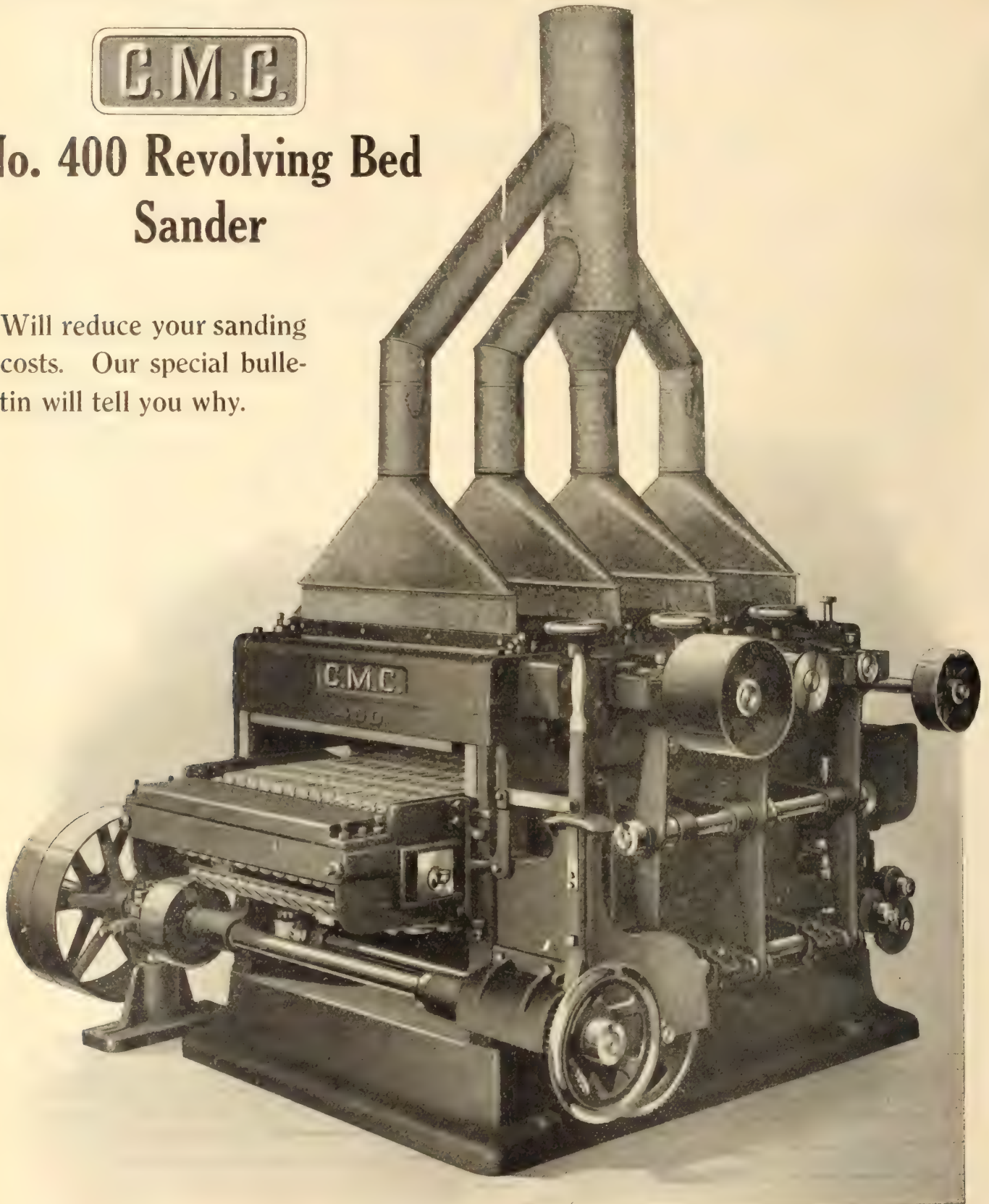
The Preston Woodworking Machinery Co.

Preston, Ontario, Canada Limited



No. 400 Revolving Bed Sander

Will reduce your sanding costs. Our special bulletin will tell you why.



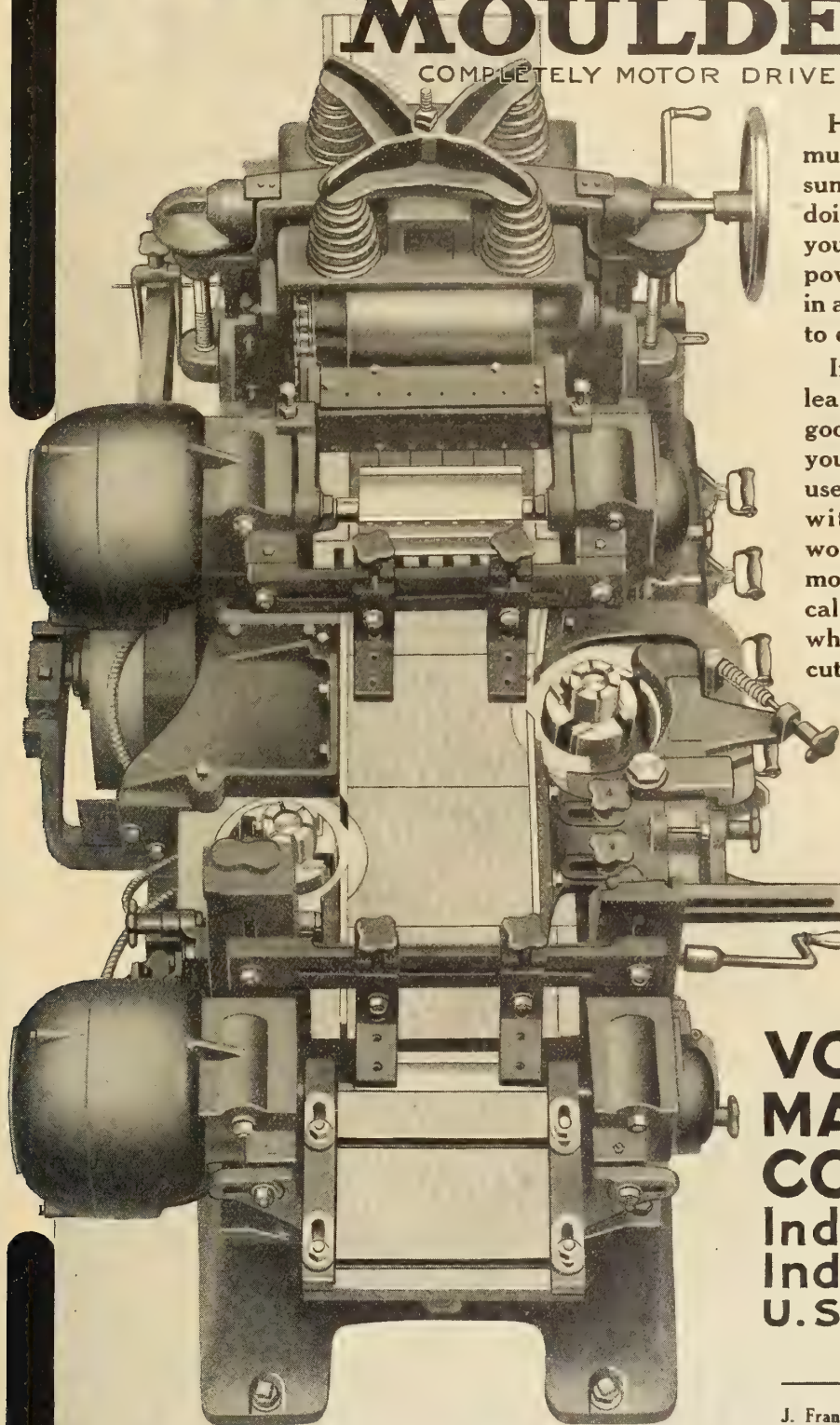
CANADA MACHINERY CORPORATION, LIMITED, GALT, ONTARIO

Toronto Office and Warerooms

Brock Avenue Subway

The
PATENTED
**EAGLESFIELD
MOULDER**

COMPLETELY MOTOR DRIVEN



Have you ever wondered how much power your moulder consumes when it is running idle—doing no work at all—and have you considered that this no-load power is always being consumed, in addition to the power required to do the actual cutting?

If you positively knew that at least one-half and probably a good deal more than a half of your moulder power was being used only to run the machine without its doing any work, wouldn't you be interested in a moulder that consumed practically no power, excepting that which is required for doing the cutting.

Under average conditions that comparison can be made between the power expense of your moulder and an Eaglesfield Moulder. The figures are startling, but we would be pleased to have you send for facts which will convince you of these claims.

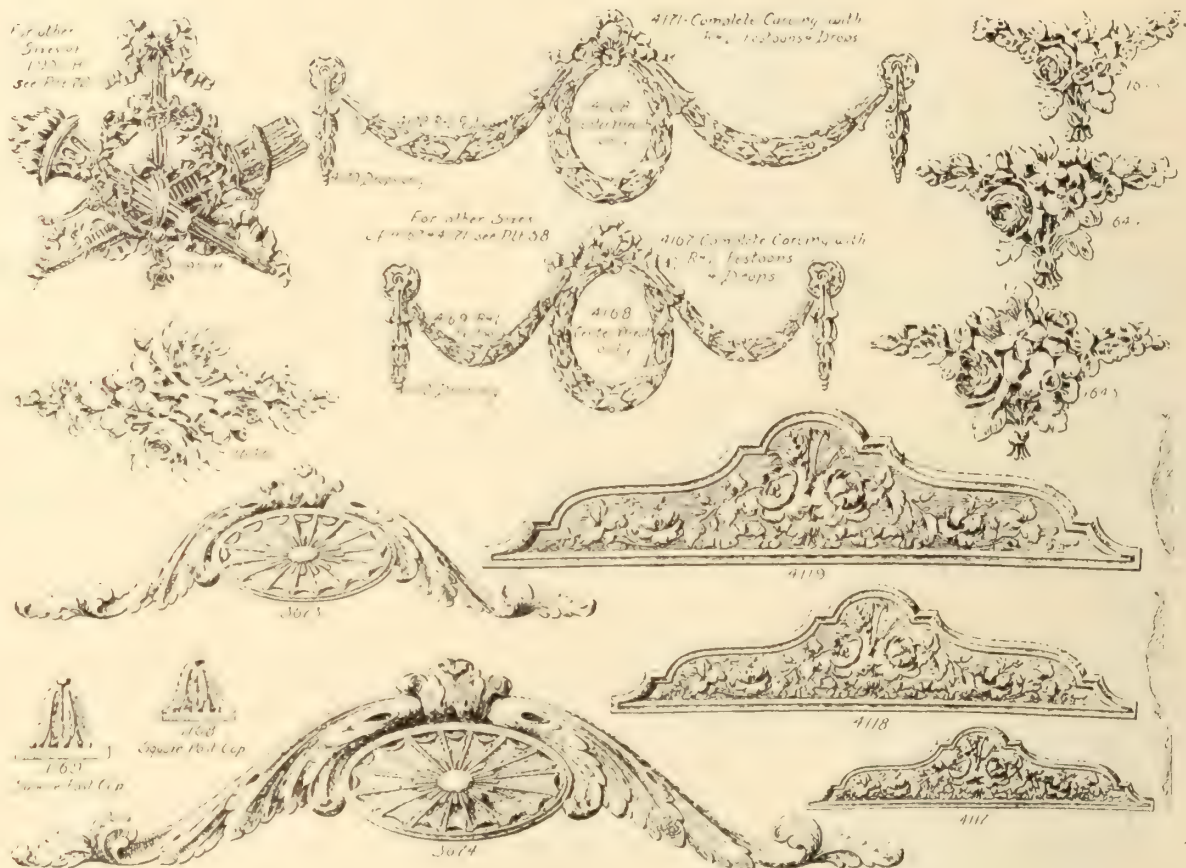
**VONNEGUT
MACHINERY
COMPANY**
Indianapolis,
Indiana.,
U.S.A.

— REPRESENTED BY —

J. Frank Cates.....Healey Building, Atlanta.
John J. Canavan.....261 Broadway, New York.
Chicago Machinery Exchange.....Chicago.
Wm. H. Field Co., 35 Washington St. N., Boston.

This aeroplane view plainly shows smooth continuous table top of the twelve inch machine—nothing in which the stock will catch and cause a jam

Period Carvings



Have you a copy of our New Catalogue? If Not, Why Not?

Woodfibre Ornaments or Compo

WE SOLICIT YOUR INQUIRIES

J. WALTER & SONS

KITCHENER - ONT.



FROM
MANUFACTURER
TO
MANUFACTURER

1c Paid
Memphis, Tenn.
Permit No. 285
Third Class Matter

QUALITY

IS OUR WATCHWORD
AND THE FOUNDATION ON
WHICH OUR BUSINESS STANDS.

GRADE

IN THE LUMBER BUSINESS IS INSEPARABLY
LINKED WITH QUALITY. WE HAVE A CORPS OF
EFFICIENT INSPECTORS WHO ATTEND TO THIS
IMPORTANT DETAIL.

SERVICE

IS A VITAL PART OF ANY BUSINESS AND IN OUR
ORGANIZATION WE PAY SPECIAL ATTENTION TO THIS FEATURE.

MEMPHIS BAND MILL CO.
MEMPHIS, TENN.



SOUTHERN HARDWOODS

At Knoxville, Tenn.

SCENTED RED CEDAR

25,000 ft. 4/4 No. 1 Com. and Btr.

CHESTNUT

60,000 ft. 4/4 No. 1 Com. and Btr.

48,000 ft. 4/4 Sound Wormy.

PLAIN RED OAK

	1s & 2s	No. 1 Com.
4/4	34,000	40,000
6/4	9,000	18,000
8/4		58,000

PLAIN WHITE OAK

	1s & 2s	No. 1 Com.
4/4	6,000	
6/4	24,000	38,000
8/4	8,000	11,000
12/4	7,000	7,000

QUARTERED WHITE OAK

	1s & 2s	Clear Strips	No. 1 Com.
4/4	12,000	14,000	5,000

POPLAR

	1s & 2s	Saps	No. 1 Com.
4/4			23,000
6/4		6,000	163,000
8/4			14,000
12/4			40,000

WALNUT

4/4 Log Run	3,000
8/4 No. 2 Com.	17,000
12/4 No. 2 Com.	7,000
16/4 No. 2 Com.	7,000

At Fonde, Ky.

WHITE ASH

12,000 ft. 4/4 No. 2 Com. and Btr.

24,000 ft. 6/4 No. 2 Com. and Btr.

5,000 ft. 8/4 No. 2 Com. and Btr.

BASSWOOD

70,000 ft. 4/4 No. 2 Com. and Btr.

PLAIN WHITE OAK

	1s & 2s	No. 1 Com.
4/4	32,000	61,000
5/4	3,000	4,000
6/4	6,000	7,000
8/4	3,000	2,000
10/4	2,000	3,000
12/4	4,000	6,000

QUARTERED WHITE OAK

	1s & 2s	Clear Strips
4/4	26,000	9,000

POPLAR

	Saps	No. 1 Com.	No. 2 Com.
5/8	105,000	35,000	
4/4		30,000	100,000
5/4			8,000
6/4	3,000	68,000	52,000
8/4		8,000	
10/4		6,000	2,000
12/4		30,000	1,000

West Virginia Specials

BASSWOOD

6 cars 4/4 No. 2 Com. and Btr.

BEECH

cars 4/4 No. 1 Com. and Btr.

cars 5/4 No. 1 Com. and Btr.

cars 6/4 No. 1 Com. and Btr.

CHESTNUT

8 cars 4/4 1s and 2s and Selects

2 cars 5/4 1s and 2s and Selects

4 cars 6/4 1s and 2s and Selects

2 cars 8/4 1s and 2s and Selects

10 cars 4/4 No. 1 Com. and Btr. Wormy

4 cars 5/4 No. 1 Com. and Btr. Wormy

6 cars 6/4 No. 1 Com. and Btr. Wormy

2 cars 8/4 No. 1 Com. and Btr. Wormy

6 cars 4/4 1s and 2s Qtd. Wormy

PLAIN RED OAK

cars 4/4 No. 1 Com. and Btr.

2 cars 5/4 No. 1 Com. and Btr.

3 cars 6/4 No. 1 Com. and Btr.

10 cars 4/4 No. 1 Com.

PLAIN WHITE OAK

4 cars 5/4 No. 1 Com.

6 cars 6/4 No. 1 Com.

4 cars 8/4 No. 1 Com.

Solid or Mixed Cars direct from the mill.

THE ATLANTIC LUMBER CO.

310 Manning Chambers, TORONTO

Red Gum Sap Gum Oak Tupelo

We carry a well assorted stock ready for immediate shipment of all Southern Hardwoods. Make a specialty of loading mixed cars of various grades and thicknesses for the factory trade. We issue a monthly stock sheet showing at a glance delivered prices on everything we have ready for shipment. If you are not receiving these lists, please write us.

P. J. Lawrence Lumber Co.

Sales Office

Syndicate Trust Bldg.

St. Louis, Mo., U.S.A.

J. V. Stimson & Co.

Manufacturers and Wholesalers Band Sawn

Hardwood Lumber and Dimension Stock

Band Mills and Yards

OWENSBORO, KY.

Permit us to figure on your needs in Plain and Quartered Red and White Oak, Ash, Poplar and Walnut.

Our "Specialty" is Quality

When Dry Lumber Gets Scarce

Remember !

Our dry-kiln is at your service—500,000 feet per month capacity and 10,000,000 feet of lumber from our own band-mills to draw upon.

James E. Stark & Co., Inc.
MEMPHIS, TENN.

Bone Dry

Right now dry lumber is scarce. Here's a list of dry stock ready for prompt shipment. Remember there's 30 years' experience back of every board.

- 1 car 5/8 FAS Plain Red Oak.
- 1 car 5/8 No. 1 Com. Plain Red Oak.
- 10 cars 4/4 No. 2 Com. and Btr. Plain Red Oak.
- 1 car 5/4 FAS Plain Red Oak.
- 1 car 5/4 No. 1 Com. Plain Red Oak.
- 2 cars 6/4 FAS Plain Red Oak.
- 2 cars 6/4 No. 1 Com. Plain Red Oak.
- 1 car 8/4 FAS Plain Red Oak.
- 1 car 8/4 No. 1 Com. Plain Red Oak.
- 3 cars 10/4 FAS Plain Red Oak.
- 1 car 10/4 No. 1 Com. Plain Red Oak.

*Write for our Complete List
with Prices*

North Vernon Lumber Co.
NORTH VERNON, IND.
LOUISVILLE, KY. DYERSBURG, TENN.
Every Board Branded "NVLCO." Quality Guaranteed

Indiana

Quartered Red and White

OAK

1,000,000 feet of dry stock carried
at all times

ALSO PLAIN OAK AND ASH

We manufacture all stock carried

Evansville Band Mill Co.

FRANK M. CUTSINGER, Pres.
GEO. H. FOOTE, Vice-Pres. & Treas.
JOSEPH WALTMAN, Secretary

Mills at EVANSVILLE, Indiana

HARDWOODS

The following is a partial list of lumber
which we have on hand, ready for quick
shipment.

ASH

1" FAS & No. 1 Com. 38,740'
2" FAS & No. 1 Com. 28,200'
2½" FAS & No. 1 Com. 30,004'
3" FAS & No. 1 Com. 39,608'

BASSWOOD

3" FAS & No. 1 Com. 11,080'

BEECH

5/8" Log Run21,200'
2" Log Run12,700'

SOFT ELM

5/8" Log Run21,200'
1½" FAS & No. 1 Com. 24,300'
2" FAS & No. 1 Com. 95,273'
2½" FAS & No. 1 Com. 71,533'
3" FAS & No. 1 Com. 40,338'
4" FAS & No. 1 Com. 12,300'

HICKORY

1" FAS & No. 1 Com. 11,500'
1½" FAS & No. 1 Com. 31,780'

2" FAS & No. 1 Com. 27,418'
2½" FAS & No. 1 Com. 41,753'
3" FAS & No. 1 Com. 14,457'

PLAIN OAK

1" FAS & No. 1 Com. 217,650'
1½" FAS & No. 1 Com. 13,400'
1½" FAS & No. 1 Com. 60,000'
2" FAS & No. 1 Com. 125,953'
2½" FAS & No. 1 Com. 99,486'
3" FAS & No. 1 Com. 161,017'
4" FAS & No. 1 Com. 50,526'

HARD MAPLE

1" FAS & No. 1 Com. 17,820'
2" FAS & No. 1 Com. 29,935'
2½" FAS & No. 1 Com. 97,296'
3" FAS & No. 1 Com. 28,676'

SOFT MAPLE

1" Log Run15,100'
2" Log Run12,980'
2½" Log Run34,332'
3" Log Run16,280'

Our stock is first-class, and we guarantee satisfaction
with every shipment.

John I. Shafer Hardwood Co.

Farmers Trust Building
SOUTH BEND, IND., U.S.A.

We Operate 4 Band Mills

and carry large stocks of

Quartered White Oak
Quartered Red Oak
Plain White Oak
Plain Red Oak

Ash
Poplar
Hickory
Walnut
Gum
Elm
Maple, etc.

Crating and Dimension Stock a Specialty

Can furnish you highly satisfactory
stock at right prices—TRY US.

MALEY & WERTZ

EVANSVILLE, INDIANA

Churchill-Milton Lumber Co.

Sales Office: Greenwood, Miss.

Mills—Greenwood, Miss.; Glendora, Miss.

Let us have your enquiries for—

Ash

Plain Oak

Quartered
White Oak

Quartered
Red Oak

Elm

Tupelo

Cottonwood

Plain Red
Quartered Red

G

Sap

U

Qtd. Red, Sap
No Defect

M

OUR SPECIALTY IS DELTA GUM

The Story of Our Business

Chapter II.—OUR MILLS

We operate two band mills and now have a third under construction. These are modern mills, equipped with the best machines and operated by skilled workmen, most of whom have been in our employ for a number of years. These mills have a capacity of ten million feet each per annum, a total capacity when our new mill is completed, of thirty million feet annually. The mills are located not twenty-five miles apart, in the lower Yazoo Valley in Mississippi, where the quality and texture of the lumber is all uniform. Back of these mills we own a large area of virgin hardwoods, with Yazoo Valley Gum predominating. Our lumber is nicely manufactured, carefully piled, properly graded, and our virgin growth of large timber produces excellent widths and lengths. Later we shall devote a special chapter to our Red Gum, but now you will do well to get our quotations on the following **thoroughly dry stock**, ready for prompt shipment:—

QTD. RED GUM				PLAIN RED GUM			
4/4' No. 1 Common and Selects	100 M. ft.	4/4' No. 1 Common and Selects	60 M. ft.				
5/4 " "	100 "	5/4 " "	100 "				
6/4 " "	50 "	6/4 " "	50 "				
8/4 " "	30 "	8/4 " "	20 "				

Also inquire for any other items of gum you may need:—



BELLGRADE LUMBER CO.

MEMPHIS, TENN.

RED GUM

"AMERICA'S FINEST CABINET WOOD"

The really successful merchant, it matters not in what line, is he who takes the trouble to ascertain

WHAT THE PUBLIC WANTS

This is especially true in its application to the furniture manufacturer and his retailer. He *has to* study his public—or he soon will have no public.

That portion of his public which is influenced by the principles of good taste wants RED GUM furniture—Why? Because the color, grain and soft, velvety quality of this, the finest of America's cabinet woods, when handled by a master cabinet-maker, results in a thoroughly charming piece of furniture—the kind that people of nice discrimination like to have around—and want strongly enough to *ask for*. Then can YOU supply it?

Makers and dealers desiring to see samples of RED GUM, both rough and finished, are invited to correspond with us at once.

GUM LUMBER MANUFACTURERS' ASSOCIATION

1314 Bank of Commerce Bldg., Memphis, Tennessee.

Why Walnut is Superior

Mechanically

Walnut is only 61 per cent. as heavy as white oak and only 86 per cent. as hard and yet—

Its bending strength is 110 per cent. of oak

Its stiffness is 108 per cent. of oak

Its shock resistance is 110 per cent of oak

Its compression strength parallel to the grain is
122 per cent. of oak.

Its shrinkage in volume is 75 per cent. of oak.

Appearance

In addition to remarkable physical qualities, walnut has an even texture, and a color and figure of persistent charm. It has deep luster, shadowy tones and delicate shades. It is warm and living, Age, the great destroyer, only enhances its beauty. Walnut has distinction, quality and character.

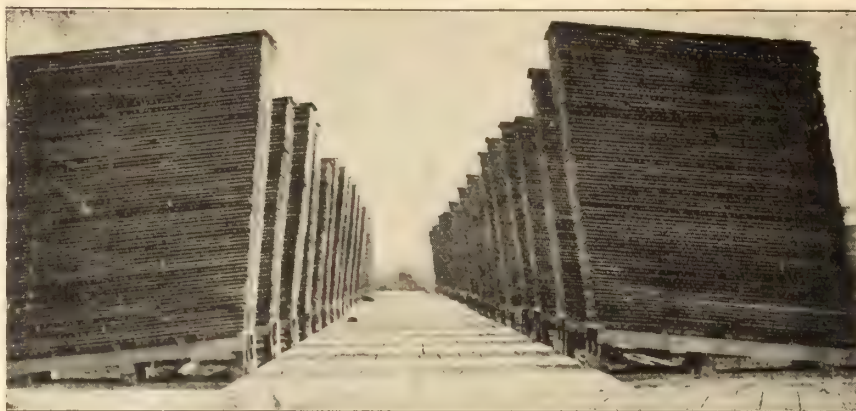
Walnut went to War but
has come back to stay.

American Walnut Manufacturers' Association

115 Broadway

NEW YORK

Two Conclusive Proofs Why You Should Buy Your Lumber From Us



Examine closely the picture above, then read the following letter we received a few days ago from one of the largest manufacturers of Mouldings in the world. (Lumber for Mouldings must be absolutely flat and straight.)

"We have been using exclusively gum lumber, both sap and red, shipped by you for the last three years, and have been well pleased with its character, both as to grade and condition. The condition of same being an evidence of careful handling before shipping. We have been well pleased with the transactions which we have had with you, and will endeavor to continue using your stock as long as available."

We also manufacture Oak, Ash, Elm, and Cypress at Louise, Miss., mills. Get our prices before placing your orders and become a SATISFIED user of Gum or one of the other Southern hardwoods.

BARR-HOLADAY LUMBER CO.

GREENFIELD - OHIO

& YET AGAIN

here's proof that we are
not only PULLING
FOR GOOD OLD

OAK

but also for those
WHO SELL IT—

IS THIS YOU?

Month by month we
are working on the
CONSUMER
(Your Customer)
for a big, strong
"COME-BACK"

of OAK!

Watch us!

*Does your line
meet the issue?
If not, it can
by next season.*

AMERICAN OAK MFRS' ASSN.,

LET US CONSULT TOGETHER FOR THE GOOD OF
ALL CONCERNED. WRITE US. WE'LL ANSWER.
ROOM 1408, 14 MAIN STREET, MEMPHIS, TENNESSEE



STILL ANOTHER OAK FURNITURE ADV. APPEARING
IN THE BEST MAGAZINES IN AMERICA.

OAK, as a CABINET WOOD, is
serene in its conscious superiority.

Responsive alike to the best skill of the artisan and the artist, OAK combines all the qualities which contribute most to a home whose FURNITURE must (because of the little folks) at the same time impart ideas of beauty, dignity, poise and permanence—and good-naturedly repel the onslaughts of buoyant youth.

no finer heirloom than good OAK furniture."
life and enduring investment—none but

SAP AND RED GUM

ALL KINDS OF Southern Hardwoods CRATING

"We specialize in furnishing Factory Stock, including all grades and thicknesses of Cypress, Sap, Red, Tupelo and Black Gum, Cottonwood, Oak, Elm, Sycamore and Ash. Permit us to take care of your order".

Write us

QUALITY AND SERVICE OUR MOTTO

Cornelius Lumber Company
ST. LOUIS, Mo., U. S. A.

"Gum of Quality"

Yazoo River Red Gum

as produced by

Thomas & Proetz Lumber Company

No. 3400 Hall St. St. Louis, Mo.

is carefully manufactured; soft in texture; dark, rich in color; and admirably suited for furniture and interior trim.

Mills—Belzoni, Miss.; Catchings, Miss.
Naples, La.

If you are not buying from us, write today.

List of Dry Stock on Hand Ready for Immediate Shipment

GUM

61,211 ft. 1 x 13-17" Sap Gum Box.
52,041 ft. 1 x 9-12" Sap Gum Box.
61,207 ft. 1" 1st and 2nds Red.
472,426 ft. 1" No. 1 Com. and Selects Red.
4,170 ft. 8/4 1sts and 2nds Red.
12,866 ft. 5/4 1sts and 2nds Red.
106,496 ft. 5/4 No. 1 Com. and Selects Red.
10,672 ft. 6/4 1sts and 2nds Quartered Red.
3,916 ft. 8/4 1sts and 2nds Qtd. Red.
12,610 ft. 4/4 No. 1 Com. & Selects Qtd. Red.
2,250 ft. 6/4 No. 1 Com. and Selects Qtd. Red.
579,243 ft. 1" No. 1 Com. and Selects Sap.
337,947 ft. 1" No. 2 Com. Sap.
112,142 ft. 1" No. 3 Com. Sap.
12,159 ft. 5/4 1st and 2nds Sap.
261,242 ft. 5/4 No. 1 Com. and Selects Sap.
149,049 ft. 5/4 No. 2 Com. Sap.
145,246 ft. 6/4 No. 1 Com. and Selects Sap.
173,047 ft. 6/4 No. 2 Com. Sap.
14,219 ft. 6/4 No. 3 Com. Sap.

YELLOW CYPRESS

30,302 ft. 4/4 1st and 2nds.
33,313 ft. 4/4 Selects.
15,594 ft. 4/4 Shop.
31,165 ft. 4/4 No. 1 Common.
23,915 ft. 4/4 No. 2 Common.
137,216 ft. 5/4 Shop.
51,492 ft. 5/4 No. 1 Common.
33,246 ft. 5/4 No. 2 Common.
11,315 ft. 6/4 1sts and 2nds.
8,390 ft. 6/4 No. 1 Common.
6,601 ft. 6/4 No. 2 Common.
21,078 ft. 8/4 1sts and 2nds.
17,880 ft. 8/4 Select.
12,147 ft. 8/4 Shop.
49,478 ft. 8/4 No. 1 Com.
37,493 ft. 8/4 No. 2 Com.
11,200 ft. 10/4 1st and 2nds.
12,391 ft. 10/4 Select.

YELLOW CRESS (Cont'd).

11,019 ft. 10/4 Shop.
5,012 ft. 10/4 No. 1 Com.
4,516 ft. 10/4 No. 2 Com.
10,785 ft. 12/4 1sts and 2nds.
9,998 ft. 12/4 Selects.

COTTONWOOD

40,425 ft. 1 x 9/12" Box Bds. 40% 11" 12"
49,354 ft. 1 x 6-12" 1sts and 2nds.

HACKBERRY

90,200 ft. 1" No. 2 and 3 Com.
8,250 ft. 8/4 L.R.—largely No. 2 Com.

HONEY LOCUST

37,400 ft. 6/4 Log Run.

TUPELO

125,020 ft. 1" No. 1 Com. and Selects.

FIGURED RED GUM

10,429 ft. 1" 1st and 2nds Plain.
26,241 ft. 1" No. 1 Com. and Sel. Plain.

RED OAK

73,126 ft. 1" 1st and 2nds.
121,062 ft. 1" No. 1 Com. and Selects.
119,007 ft. 1" No. 2 Com.
266,149 ft. 1" No. 3 Com.
29,241 ft. 8/4 1st and 2nds.
132,147 ft. 8/4 No. 1 Com. and Selects.
26,092 ft. 8/4 No. 2 Com.
87,987 ft. 10/4 1st and 2nds.
92,096 ft. 10/4 No. 1 Com. and Selects.
3,600 ft. 3/4" 1sts and 2nds Qtd. White
1,500 ft. 3/4" 1sts and 2nds Pl. Red.

PECAN HICKORY

26,300 ft. 1" Log Run.
144,190 ft. 8/4 Log Run.
11,550 ft. 10/4 Log Run.
10,143 ft. 12/4 Log Run.

MISSISSIPPI ELM

57,116 ft. 6/4 Log Run.
39,142 ft. 6/4 No. 2 Com.
46,992 ft. 8/4 Log Run.
34,414 ft. 12/4 Log Run.

QTR. SAWN BLACK GUM

11,421 ft. 8/4 1st and 2nds.
19,140 ft. 8/4 No. 1 Com. and Selects.
13,291 ft. 8/4 No. 2 Com.
12,146 ft. 1" Log Run.

WHITE CANE ASH

8,141 ft. 1" Log Run.
55,142 ft. 1" No. 1 Com. and Selects.
54,296 ft. 1" No. 2 Com.
14,283 ft. 1" No. 3 Com.

8/4 DOG BOARDS—SMALL % 6/4

11,261 ft. Cypress.
7,440 ft. Elm.
23,280 ft. Sap Gum.
33,860 ft. Sycamore.
23,040 ft. Hackberry.
3,840 ft. Ash.
12,196 ft. Tupelo.

SYCAMORE

59,403 ft. 6/4 1st and 2nds.
104,937 ft. 6/4 No. 1 Com. and Selects.
60,528 ft. 1" No. 2 Com.
19,249 ft. 5/4 No. 2 Com.
48,104 ft. 6/4 No. 2 Com.
12,146 ft. 6/4 No. 3 Com.
23,107 ft. 4/4 No. 3 Com.

ABERDEEN LUMBER COMPANY, - Pittsburgh, Pa.

Dry Spruce and Birch

Good Stocks, Prompt Shipments, Satisfaction

C. A. SPENCER, Limited

Wholesale Dealers in Rough and Dressed Lumber

Offices—500 McGill Building
MONTREAL - - - Quebec

Hardwood Lumber

10 cars—2¼ and 2½ in. Bending Oak.

12 cars—1 in. FAS. Red and White Oak.

7 cars—1 in. No. 1 Com. Red and White Oak.

6 cars—1 in. No. 1 Com. & Btr. Qtd. W. Oak.

4 cars—1 in. Log Run Basswood.

2 cars—2½ in. No. 1 Com. & Btr. Dry Hard Maple.

3 cars—4 in. No. 1 Com. & Btr. Green Hard Maple.

We Have Quite a Complete Stock of Plain and Quartered Red and Sap Gum—Send Us Your Enquiries

THE E. & W. LUMBER CO.

South Bend, Indiana

F. T. DOOLEY, President.

T. E. JONES, Secy.-Treas.

F. T. Dooley Lumber Co.

Inc.

MANUFACTURERS and WHOLESALERS
of

SOUTHERN HARDWOODS

Plain and Quartered Oak
Cypress, Gum, Ash
Soft Maple and Elm

Send us your inquiries

Memphis Tennessee

Hardwoods

We can furnish you immediately, Factory Stock including all grades and thicknesses of

**Walnut, Chestnut
Mahogany, Teak Oak
Ash, Cypress**

ALSO

VENEERS

**Oak, Maple, Walnut and
other Fancy Woods**

The McLennan Lumber Co.

Limited

MONTREAL

QUEBEC

American Hardwood Lumber Co.

St. Louis, Mo.

Large stock of—

**Dry Ash, Quartered Oak
Plain Oak and Gum**

Shipments from — NASHVILLE, Tenn.,
NEW ORLEANS, La., and BENTON, Ark.

POPLAR GUM BIRCH

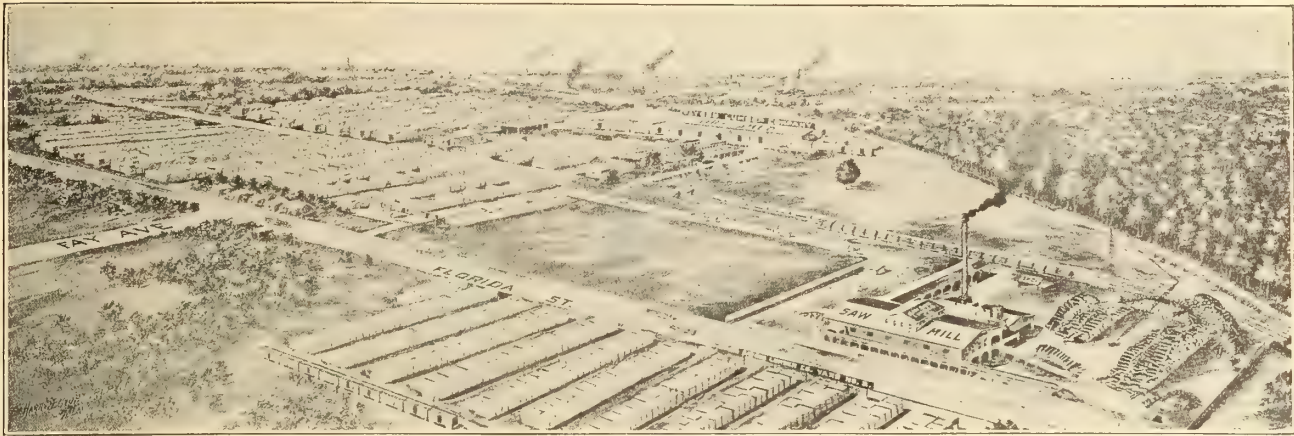
For prompt shipment we carry in stock large quantities of Rotary Cut, Sliced and Sawed Veneers and Southern Hardwood Lumber.

Send us your inquiries—our prices and service will insure future business.

Christmann Veneer & Lumber Co.

3750 N. Second St., St. Louis, Mo.

MAHOGANY WALNUT OAK



Band Mill and Yards, Memphis Plant

"Direct from Producer to Consumer"

Stock List—Prices F.O.B. Memphis, Tenn., Effective Until April 24, 1919

PLAIN RED OAK

100M'	5/4 1s and 2s	\$67.00
152M	6/4 1s and 2s	68.00
120M	8/4 1s and 2s	80.00
10M	10/4 C. and B.	\$70-90.00
110M	11/4 C. and B.	70-90.00
117M	12/4 C. and B.	70-90.00
50M	15/4 C. and B.	75-95.00
100M	5/4 No. 1 Com.	44.00
440M	6/4 No. 1 Com.	45.00
70M	8/4 No. 1 Com.	53.00
2M	10/4 No. 1 Com.	70.00
2M	12/4 No. 1 Com.	70.30
80M	4/4 No. 2 Com.	28.00
14M	5/4 No. 2 Com.	30.00
15M	6/4 No. 2 Com.	32.00

CEDAR

6M'	4/4	\$100.00
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ASH

2M'	5/4 1s and 2s	\$70.00
20M	4/4 No. 1 Com.	40.00
35M	6/4 No. 1 Com.	50.00
10M	8/4 No. 1 Com.	60.00
1M	10/4 No. 1 Com.	95.00
10M	4/4 No. 2 Com.	28.00
67M	6/4 No. 2 Com.	30.00

CYPRESS

14M'	4/4 Shop	\$35.00
6M	4/4 Com.	31.00

COTTONWOOD

60M'	4/4 1s and 2s	\$40.00
5M	4/4 Common	31.00
3M	9-12" Box Boards	50.00
2M	13-17" Box Boards	60.00

C. & B. QRT'D SAP GUM

45M'	6/4 1s and 2s	\$38.00
24M	12/4 C. and B.	\$38-45.00
11M	10/4 C. and B.	38-45.00

QRT'D WHITE OAK

3M'	4/4 10" and up	\$150.00
10M	6/4 1s and 2s	110.00
20M	8/4 1s and 2s	120.00
2M	3/4 C. and B.	
25M	4/4 No. 1 Com.	68.00
35M	5/4 No. 1 Com.	75.00
85M	6/4 No. 1 Com.	75.00
13M	8/4 No. 1 Com.	80.30
1M	10/4 No. 1 Com.	85.00
13M	4/4 No. 2 Com.	38.00
8M	6/4 No. 2 Com.	38.00
2M	8/4 No. 2 Com.	38.00

C. & B. PLAIN RED GUM

30M'	4/4 1s and 2s	\$46.00
280M	4/4 No. 1 Com.	32.00
115M	5/4	\$35-47.00
300M	6/4	36-48.00
2M	8/4	39-52.00

C. & B. QRT'D RED GUM

175M	6/4 C. and B.	\$43-53.00
23M	8/4 1s and 2s	55.00
2M	8/4 No. 1 Com.	45.00

QRT'D RED OAK

1M'	6/4 1s and 2s	\$90.00
2M	4/4 No. 1 Com.	60.00

LOG RUN ELM

30M'	6/4	\$30.00
20M	8/4	32.00
20M	8/4 No. 2 Com.	22.00

4/4 LOG RUN WALNUT

5M'	No. 1 Com.	60.00
	No. 2 Com.	40.00

GUM BOX BOARDS

175M'	13-17"	\$44.00
55M	9-12	38.00

PLAIN WHITE OAK

2M'	3/4 C. and B.	
10M	6/4 1s and 2s	78.00
10M	8/4 1s and 2s	85.00
2M	10/4 C. and B.	\$70-90.00
38M	11/4 C. and B.	70-90.00
1M	12/4 C. and B.	70-90.00
10M	15/4 C. and B.	75-95.00
40M	5/4 No. 1 Com.	44.00
3M	6/4 No. 1 Com.	48.00
170M	8/4 No. 1 Com.	55.00
18M	10-12/4 No. 1 Com.	70.00
125M	4/4-6/4 No. 2	\$28-30-32.00
147M	4/4-6/4 No. 3	18.00

PLAIN SAP GUM

11M'	4/4 13" and up	\$38.00
60M	5/4 1s and 2s	35.00
285M	5/4 No. 1 Com.	29.00
110M	8/4 No. 1 Com.	31.00
250M	4/4 No. 2 Com.	23.00
90M	5/4 No. 2 Com.	24.00
185M	6/4 No. 2 Com.	24.00
30M	8/4 No. 2 Com.	25.00
12M	10/4 No. 2 Com.	26.00
18M	12/4 No. 2 Com.	26.00
40M	5/4-6/4 No. 3 Com.	20.00

HICKORY

7M'	10/4 L. R.	\$90-70-45.00
15M	6/4 No. 3 Com.	18.00
1M	10/4 No. 3 Com.	18.00

TUPELO

7M'	4/4 1s and 2s	\$33.00
5M	6/4 1s and 2s	34.00
4M	4/4 Common	29.00

MAPLE

12M'	8/4 L. R.	\$35.00
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Wire your order at our expense

GAYOSO LUMBER COMPANY

MEMPHIS, TENNESSEE

GEO. C. BROWN & COMPANY

Band Mill, Proctor, Ark.

Main Office, Memphis, Tenn

Canadian Representative: M. E. Cummings, 814 Richmond Ave., Buffalo, N. Y.

St. Francis Basin Hardwoods Tennessee Aromatic Red Cedar

"We are enclosing check for the last car of Kraetzer Cured Gum, and will say that it was very nice stock, showing apparent care in its preparation and in manufacture, as well as being a high grade of No. 1 Com."

Selection from a letter written us by a satisfied user of our stock. Many other letters reproduced in our booklet "WHAT OTHERS SAY"—yours for the asking—may we send it?

DELIVERED PRICES AND DESCRIPTIONS CHEERFULLY FURNISHED

Oak Timbers Cut to Order

SAP GUM	Feet
4/4" Panel, 18 in. and up	15,000
4/4 Box Boards, 13-17 in.	100,000
4/4 Box Boards, 9-12 in.	150,000
4/4 1st and 2nd, 13-17 in.	125,000
4/4 No. 2 and No. 3 Common	200,000
5/4 No. 1 Common	35,000
6/4 1st and 2nd	4,000

PLAIN RED GUM	Feet
4/4" 1st and 2nd	200,000
4/4 No. 1 Common	250,000
5/4 1st and 2nd	25,000
5/4 No. 1 Common	60,000
6/4 1st and 2nd	60,000
6/4 No. 1 Common	150,000
8/4 No. 1 Common	35,000

QUARTERED RED GUM	Feet
4/4" 1st and 2nd	150,000
4/4 No. 1 Common	200,000
5/4 1st and 2nd	15,000
5/4 No. 1 Common	16,000
6/4 No. 1 Common	30,000
8/4 No. 1 Common	32,000
10/4 1st and 2nd	14,000
12/4 Com. and Bet.	36,000

SELECTED FIGURED RED GUM	Feet
4/4" 1st and 3rd Plain	40,000
4/4 1st and 2nd Qtd.	12,000
10/4 1st and 2nd Qtd.	5,000
12/4 1st and 2nd Qtd.	500

PLAIN RED OAK	Feet
4/4" No. 1 Common and Selects	
4/4 No. 2 Common	12,000
5/4 No. 1 Common and Selects	6,000
5/4 No. 2 Common	9,000
6/4 No. 1 Common and Selects	42,000
6/4 No. 2 Common	32,000
8/4 No. 2 Common	4,000

QUARTERED RED OAK	Feet
3/4" Common and Better	3,000

PLAIN WHITE OAK	Feet
4/4" 1st and 2nd	6,000
6/4 1st and 2nd	4,500
6/4 No. 1 Common and Selects	26,000
6/4 No. 2 Common	62,000
10/4 Common and Better	3,500

QUARTERED WHITE OAK	Feet
4/4" 1st and 2nd, 8 in. and up	6,000
4/4 No. 1 Common and Selects	2,500
4/4 No. 2 and Strips	6,000
5/4 Common and Better	2,000

MIXED OAK	Feet
4/4" No. 2 and S. W.	6,500
4/4 No. 3 Common	100,000
5/4 No. 3 Common	5,000
6/4 No. 3 Common	100,000

SOFT ELM	Feet
4/4" Log Run	100,000
4/4 No. 3 Common	4,000
6/4 Log Run	50,000
8/4 Log Run	40,000
12/4 Log Run	35,000

SOFT MAPLE	Feet
4/4" Log Run	65,000
5/4 Log Run	3,500
6/4 Log Run	10,000
6/4 No. 3 Common	14,000
8/4 Log Run	12,000
8/4 No. 3 Common	4,000
10/4 Log Run	22,000
16/4 Log Run	37,000

PECAN	Feet
6/4" No. 3 Common	25,000
8/4 Log Run	37,000
10/4 Log Run	9,000

MISCELLANEOUS	Feet
6/4" L. R. Sycamore	500
8/4 L. R. Sycamore	23,000
5/4 No. 3 Ash	8,000
6/4 No. 3 Ash	40,000
4/4 L. R. Cottonwood	2,000
4/4 L. R. Persimmon	3,000

**Tennessee Aromatic Red Cedar in straight carlots or mixed with hardwoods.
Prompt, courteous and efficient service at all times—Try us.**

Guaranteed Delivery has Been our Best Asset

Following is dry, band sawn stock, of our own manufacture. May we serve you ?

ASH
18,000' 5/8" No. 2 Com. & Bet.
17,000' 1" No. 2 Com. & Bet.
12,000' 1 1/4" No. 1 Com.
20,000' 1 1/4" No. 2 Com.
7,500' 1 1/4" Sound Wormy
4,500' 1 1/2" Nos. 1 & 2 Com.
20,000' 2" Common & Better
17,000' 2" No. 2 Common
15,000' 2 1/2" Common & Better
15,000' 3" Common & Better

BLACK GUM
10,000' 1" No. 2 Com. & Bet.
3,000' 2" No. 2 Com. & Bet.

PLAIN RED GUM
3,500' 3/4" Common & Better
60,000' 1" 1 & 2
70,000' 1" No. 1 Common
7,000' 1 1/4" 1 & 2
34,000' 1 1/4" No. 1 Common
16,000' 1 1/2" 1 & 2
38,000' 1 1/2" No. 1 Common
9,500' 2" 1 & 2
80,000' 2" No. 1 Common

QUARTERED RED GUM
20,000' 1" 1 & 2
98,000' 1" No. 1 Common
12,000' 1 1/4" 1 & 2
70,000' 1 1/4" No. 1 Common
16,000' 1 1/2" 1 & 2
90,000' 1 1/2" No. 1 Common
70,000' 2" 1 & 2
100,000' 2" No. 1 Common
8,000' 2 1/2" 1 & 2
11,000' 2 1/2" No. 1 Common

10,000' 1" 1 & 2 (Figured)
6,000' 2" 1 & 2 (Figured)
40,000' 2" No. 1 Com. (Figured)

PLAIN SAP GUM
100,000' 5/8" No. 2 Com. & Better
70,000' 3/4" No. 2 Com. & Better
50,000' 1" 1 & 2
170,000' 1" No. 1 Common
75,000' 1" Box Boards, 9 to 12"
48,000' 1" Box Boards, 13 to 17"
14,000' 1" Pan. & W. No. 1 18"
up.

120,000' 1" No. 2 Common
35,000' 1 1/4" 1 & 2
175,000' 1 1/4" No. 1 Common
12,000' 1 1/2" 1 & 2
14,000' 1 1/2" No. 1 Common
7,000' 1 1/2" No. 2 Common
7,000' 2" 1 & 2
100,000' 2" No. 1 Common
28,000' 2 1/2" Common & Better

QUARTERED RED GUM
Sap No. Defect
12,000' 1 1/2" 1 & 2
75,000' 2" 1 & 2
15,000' 2" No. 1 Common
26,000' 2 1/2" 1 & 2
75,000' 2 1/2" No. 1 Common

PLAIN RED OAK
6,000' 5/8" No. 1 Common
9,000' 5/8" No. 2 Common
30,000' 1" 1 & 2
28,000' 1" No. 1 Common
50,000' 1" No. 2 Common
50,000' 1 1/4" 1 & 2

53,000' 1 1/4" No. 1 Common
15,000' 1 1/4" No. 2 Common
13,000' 1 1/2" 1 & 2
64,000' 1 1/2" No. 1 Common
9,000' 1 1/2" No. 2 Common
57,000' 2" 1 & 2
50,000' 2" No. 1 Common
40,000' 2" No. 2 Common
12,000' 2 1/2" 1 & 2
35,000' 2 1/2" No. 1 Common
22,000' 2 1/2" No. 2 Common
12,000' 3" No. 1 Common
3,000' 3" No. 2 Common

QUARTERED RED OAK
5,500' 3/4" No. 1 Common
10,000' 1" 1 & 2
30,000' 1" No. 1 Common
15,000' 1" No. 2 Common
15,000' 1 1/4" 1 & 2
16,000' 1 1/4" No. 1 Common
29,000' 1 1/4" No. 2 Common
2,500' 1 1/2" Common & Better
34,000' 2" Common & Better
4,300' 2" No. 2 Common

PLAIN WHITE OAK
3,500' 5/8" No. 2 Common
5,000' 3/4" No. 1 Common
4,000' 3/4" No. 2 Common
30,000' 1" 1 & 2
30,000' 1" No. 1 Common
17,000' 1" No. 2 Common
7,000' 1 1/4" 1 & 2
20,000' 1 1/4" No. 1 Common
17,000' 1 1/4" No. 2 Common

31,000' 1 1/2" No. 1 Common
20,000' 2" 1 & 2
75,000' 2" No. 1 Common
75,000' 2" No. 2 Common
6,000' 2 1/2" 1 & 2
30,000' 2 1/2" No. 1 Common
2,500' 3" 1 & 2
90,000' 3" No. 1 Common
12,000' 3" No. 2 Common

QUARTERED WHITE OAK
1,500' 3/4" Common & Better
3,200' 5/8" No. 1 Common
4,000' 3/4" 1 & 2
50,000' 3/4" No. 1 Common
3,500' 3/4" No. 2 Common
30,000' 1" 1 & 2
25,000' 1" No. 1 Common
19,000' 1 1/4" 1 & 2
31,000' 1 1/4" No. 1 Common
46,000' 1 1/4" No. 2 Common
16,000' 1 1/2" 1 & 2
7,000' 1 1/2" No. 1 Common
60,000' 2" No. 1 Common
5,000' 2" No. 2 Common

SOUND WORMY OAK
40,000' 1"
67,000' 1 1/4"
40,000' 2"
1,200' 2 1/2"

WALNUT
5,300' 1" No. 2 Common
6,100' 1 1/2" No. 2 Common
4,000' 2" No. 1 Common
500' 2" No. 2 Common

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1/2 inch	70450	2100	2100	63200	44200
5/8 inch	21760	2700	3600	75700	78900
3/4 inch	45250	5200	1500	1050	3300	48800	39600
4/4 inch	119900	2500	7200	6000	149900	315700	618600
5/4 inch	24600	7200	1000	1200	1200	7100	37200	51200	1000
6/4 inch	12100	4000	800	500	200	3800	113300	87700	600
8/4 inch	13100	7400	900	250	100	5800	36700	104600	1200
10/4 inch	11800	500	300	4400	159400	20100
12/4 inch	6900	27400	3600
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- 33 M ft. 5/4 1s and 2s.
- 26 M ft. 5/4 No. 1 Com.
- 10 M ft. 6/4 1s and 2s.
- 60 M ft. 6/4 No. 1 Com.
- 140 M ft. 4/4 2 1/2 to 5 1/2 Strips.

PLAIN WHITE OAK

- 120 M ft. 4/4 1s and 2s.
- 68 M ft. 4/4 No. 1 Com.
- 80 M ft. 4/4 No. 2 Com.
- 60 M ft. 5/4 1s and 2s.
- 70 M ft. 5/4 No. 1 Com.
- 33 M ft. 6/4 1s and 2s.
- 72 M ft. 6/4 No. 1 Com.
- 80 M ft. 8/4 1s and 2s.
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It is our policy to make high grades and to ship our customers exactly what they buy, and in no instance do we mix the grade.

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Vol. 19

Toronto, April, 1919

No. 4

The Shortage of Skilled Labor

One of the vital problems that confront those engaged in the woodworking business is securing an adequate supply of skilled labor. A shortage of efficient help is being keenly felt at the present moment. The likelihood of any decided improvement of the situation in the immediate future does not appear to be very promising.

In addition to the heavy drain on the manpower of this industry, through the call for recruits, the attractive wages offered for munitions work caused many of the remaining workmen to give up their positions in the different factories for the more lucrative employment that was to be had in the other plants.

With the cessation of munition work and the return of the men from overseas it might naturally be supposed that the majority would drift back to their former positions, and normal conditions would result. Such, however, has not been the case. Some who had had a taste of the remuneration of munition makers were loath to work for the wages that they formerly accepted, while many decided that when they were discharged from military service they would engage in some other calling.

Another disquieting feature is the fact that few, if any, young boys of to-day are entering the different factories and learning the trade from the bottom up, as they were wont to do a few years ago. There are several reasons for this, one being that they find they can secure other employment that will pay them much higher wages than they would receive while learning a trade. They possibly do not realize that in a few years they will be helping to swell the ranks of the semi-skilled men and that they will not have had any real practical training.

A more efficient system of technical training seems to hold forth some promise of aid in remedying this

condition. Before the technical school, as we know it to-day, can be of much assistance, radical changes will have to be affected.

The whole course of training, instead of merely giving the student a smattering of practical ideas, should be planned with the definite aim of thoroughly training him along such practical lines that he will be able to take his place in the industrial world as an efficient and up-to-date workman.

The technical school itself might well be patterned after the modern shop, thus familiarizing the boy with the conditions under which he will work when he follows that line into everyday life. Instead of being instructed how to make fancy boxes or other knick-knacks, he should be trained on commercial articles that are being manufactured and marketed every day.

In this way the student would not only gain a practical knowledge of articles in everyday use, but would learn the value and purpose of machines in the modern industrial world. He would learn how stock bills are made out, and how the material is efficiently routed through the factory in such a manner as to conserve labor and increase production.

A lad so trained will naturally turn to the factory for employment after finishing such a course, and will be splendidly fitted to take his place in any plant.

A method that is finding much favor across the border, is the factory training service. This, at present, is being done under government supervision. Different districts have been formed and superintendents have been placed in charge of each section.

Only the largest organizations find it practical or profitable to inaugurate a separate training department; in the smaller plants the work is carried on right in the shops, possibly under the instruction of the foreman or, where the occasion warrants, a special man may be delegated the task of helping the beginner.

The training is made as practical and intensive as possible, and the learner is given every inducement to apply himself diligently and aim at perfection. As the work performed would be routine, this department should be able to practically pay its own way.

Are elaborate technical schools or special training departments necessary? This is the age of specialists—one man doing a particular kind of work—so the simplest and most logical solution appears to be in taking an unskilled man and intensively training him for a special machine or line of work. At the same time that he is being coached, it would be advisable to evince a personal interest in him, in his work, his welfare and in the advancement that he makes. Let him feel that you have his progress at heart. When you do this you will not only assist in converting him into a skilled mechanic, but a loyal one as well; one who will develop an interest in his employment and who will stick by it. The retention of skilled hands is as important as the training of them, and equally worthy of the same consideration.

Ideas and Suggestions on Interior Trim—No. 2

The Value of Mock Beams—Different Styles of Panel Work—Stock Cut to Size at Mill—Talking Points for Millmen

By W. H. Shaw

As every professional builder and millman knows, the public has most hazy ideas as to what is required in the making of a house. What makes the home? Many things together, of course, but chiefly woodwork, doors, flooring and furniture, is it not so?

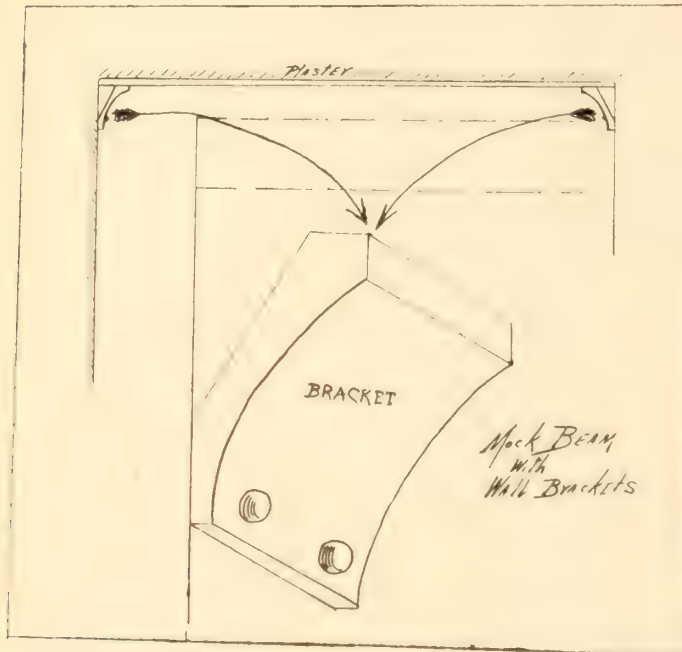
It is doubtful if any other structural detail is capable of wielding so potent an influence upon the inter-

have either mock beam or wood cornice, and construct same out of $\frac{7}{8}$ x $3\frac{3}{4}$ strip, with wood bracket to add appearance of strength. For suggestion sake, construct mock beams in livingroom as below:

This constructed of fir, Georgia pine or cypress stained and stucco plaster makes a very attractive affect and where a contractor is building a number of homes in the same locality or doing community building, he can work out a different ceiling arrangement in every house.

The same with a cheap wood cornice. This can be easily constructed of a piece of $\frac{7}{8}$ x $3\frac{3}{4}$ lumber carried around the ceiling of room keeping about $\frac{1}{2}$ inch from side walls and then planting a stock picture mould on walls about $\frac{1}{2}$ inch or $\frac{3}{8}$ inch below face of ceiling strip. These when stained certainly produce more effect than one would imagine from the size of the pieces used.

With the more expensive houses, a good beamed ceiling effect or wood cornice must be carried out altogether in proportion to the size of the rooms. If it is a new house being erected, the desired plan of mock beams can be laid out of 2-in. x 4-in. or 2-in. x 6-in. scantling, according to the width of beam securely nailed to joists, and then plaster brought up to them, and electric wires can be arranged before placing the finished beam in position. If it is a finished house where alterations are being made, a $\frac{7}{8}$ strip of 4, 6 or 8 in. corresponding to width of beam securely nailed to the ceiling is all that is necessary to carry the beams. Around the walls in all cases, there should always be a half beam or a $\frac{7}{8}$ board and this should be at least 1 inch deeper than the beams. There are two especial cost items to be considered in the building of a house. Material and labor. There was a time, and not so very long ago, when people saved material by using more labor. Now conditions are being reversed and the simplest construction is being sought, where lumber can be used in long lengths and the cutting and fitting and extra framing is being avoided as



Showing the use of the wall bracket

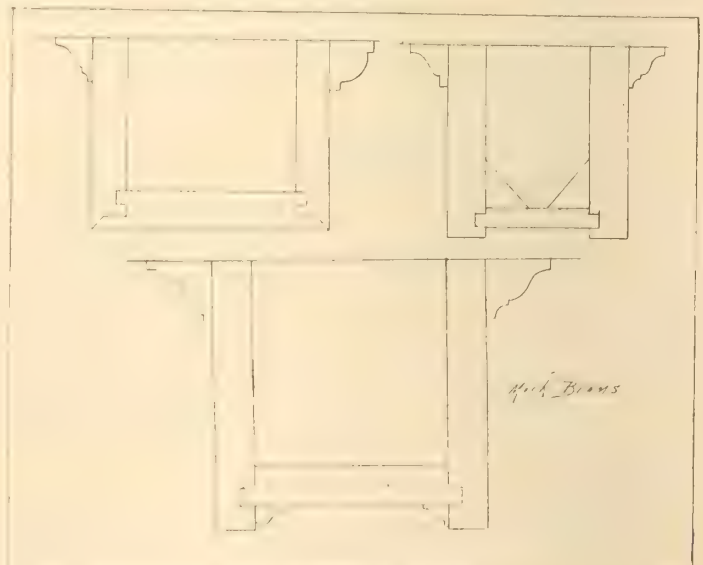
ior of a house as the wood work. Be it because of the prominence of the position it occupies or for some other reason; it is the feature of a home's interior, upon which is invariably focussed the attention of the visitor, and hence, first impressions are said to be most lasting, it should be readily evident that it is worthy in all cases, of the builders careful consideration. Through its handling, in fact, it can be made to either accentuate or detract from the general appearance of the house.

As the modern house is built, the woodwork of the rooms to a certain extent dominate the room. Its treatment sets the key for the decorations and prescribes within limits, the type of furniture which may be satisfactorily used.

Many Woods May be Used

For this purpose, you must use hardwoods, fir, Georgia pine, or cypress where the rich grain, the beautiful tone and markings of the natural wood can be fully revealed by proper finishing. You cannot buy softwood furniture. It is not made because it is unsaleable. Is it sensible to expect the public to buy an oak diningroom table which is usually covered with a spread, while you gaze upon unattractive woodwork.

Even the modest home should have the benefit of attractiveness, the modern workman's house of six rooms, living room, dining room, kitchen, with three chambers and bath above. Let the two main rooms



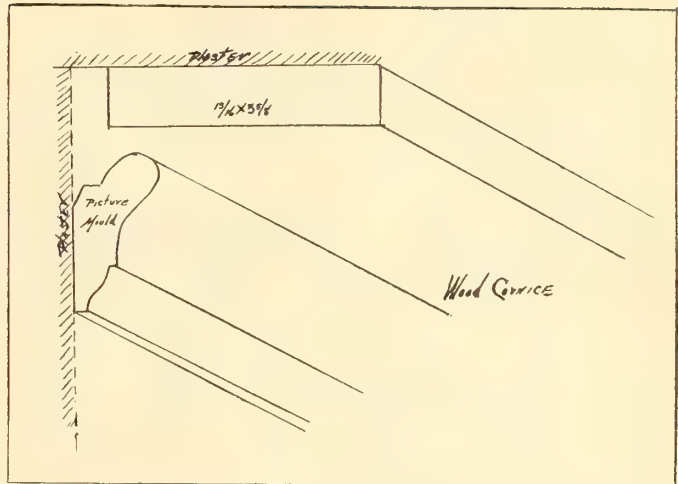
Design and construction of mock beams

far as possible. Thus when the rough core of a beam ceiling is laid out on a job exact measurements can be taken and all beams can be built, sanded, fitted, and all mouldings mitred in the mill.

One of the largest single cost items about a house is the millwork, the doors, windows, stair material, cornices, beams, panelling and such. Now architectural draftsmen are rated (and paid) according to their skill in designing special millwork.

Work to Stock Patterns

The architect takes great pride in these details of his work, rightly so too. But special millwork costs nearly twice as much as ready made or "stock" stuff. —Just as a tailored suit is double the price of one we buy across the counter.—It is far easier for an architect to sketch out millwork to suit his design, instead of getting samples of moulding, etc., carried in stock. Still stock millwork can be used successfully. How many of the houses built in this country up to a price of \$8,000 have been fully detailed by an architect,



A very plain design

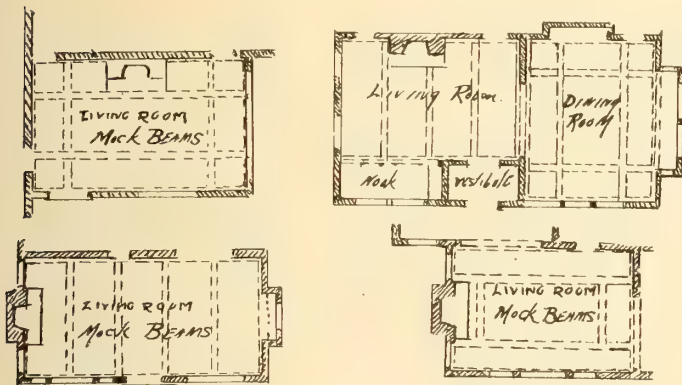
spend large sums of money in advertising, have by their designs practically confirmed the public into two lines of panelling as regards the ordinary house which is not specially detailed by an architect.

First the low panelwork or panelled base about 2 ft 6 in. or to the ordinary height of the window stool, the same mould as the stool continuing around the room as a cap mould. Second, the panelwork of about 5 ft. or 5 ft. 6 in. of either one or two panels high and the cap being in the form of a plate rail, which can be easily reached, and stiles and rails are either left square or just slightly rounded.

It is strongly recommended that the millman before allowing panelwork to leave his shop should see that the wall side of all panelling should be given a coat of good paint or for the contractor to see that the grounds on the wall are covered with a thick covering of good oil or tar paper to protect the wood from the green walls.

Millman Should Keep Informed

For a few hundred dollars you may add a thousand dollars in the sales value of a home, if you make a liberal use of mock beams, cornice and panelwork. You can give to your house much of the charm of the wonderful residences of two hundred years ago. The wise man in this practical and unpoetic generation is he who, when building, not only produces an architectural atmosphere pleasing to himself and his family but who, at the same time, has his weather eye open for



Suggestions for layout of beams

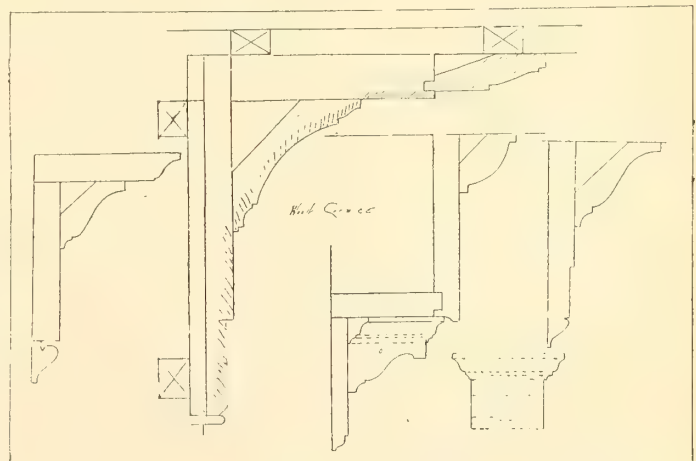
usually they are paid for plans, and the builder attends to all details, thus if the millman has handy in his office sketches of designs of beams, cornices, etc., which he has made, conforming with moulds carried in stock or at least designs for which he has knives made, why he is almost sure of getting all local business instead of that business going past to some catalogue or mail order house.

Dealing with the question of panelwork of the home, probably no particular part of millwork has so changed with the times. The designs of a few years past, when rooms were panelled to the height of the doors, and broken up into all shapes and designs of panels, and moulded with heavy flush or raised moulds, would be almost prohibitive today on account of cost of material and labor, and would be as unwelcome in the modern home, on account of the care with dust corners, etc.

The Average Height of Panels

Of course, in the days past, the small panel was a case of economy and necessity as all panels were re-sawn from solid stock. Today every millman knows that nearly all his old troubles of securing panel stock are over. Laminated or "built up" panels can be furnished by a great number of firms in nearly all woods both in quarter and rotary cut, and thus the millman has to furnish only styles and rails, base and cap and procure nearest stock panel in size to suit his requirements.

The large door and wall paper manufacturers who



Details of wood cornices

the point of view of the unknown man to whom he may want to sell the house.

The millman should always be in that position, that when the building idea takes possession of a person, and the building idea is dormant or active in every one, that person will come to you for unbiased information.

You can assure him that fine interior woodwork is just so much sales insurance. It puts his house in "Class A" of general desirability, at very small expense, costs less in proportion than any other form of interior decoration, improves with age and is easily kept in beautiful condition.

Plans for Practical Homes at Low Cost

Desirable Inexpensive Houses—General Specifications—Opportunity for Aggressive Action on the Part of Sash and Door and Planing Mill Men

Owing to the widespread need of more and better houses, and as a result of the action taken by the Great War Veterans' Association, the Manufacturers' Association and other similar organizations, an order-in-council was issued last June, authorizing the formation of the Ontario Housing Committee. This committee has investigated the housing problems of most of the urban municipalities of Ontario, and have also made a study of the requirements necessary to assure healthful living conditions. The accompanying plans and sketches have been compiled after a careful study and after many consultations with different prominent architects, and are submitted as indicating the lines along which desirable, inexpensive houses may be built.

In an endeavor to ascertain the extent of the shortage of housing accommodation a circular letter was addressed to various municipal bodies throughout the province and over sixty replied stating the need of additional accommodation in their districts. Some of the replies mention such figures as 50, 400, 500, 1,000, 5,000 etc., houses being required.

These conditions were considered to be largely due to such causes as the scarcity and dearth of capital, labor, material, hence the failure to replace the percentage of houses annually becoming unfit for habitation, or to provide new ones for the natural increase in the population. The startling disproportion between the number of marriages recorded in Toronto and the number of new houses built during those years affords ample evidence of the situation created by the diversion of private capital from building. The resultant conditions can only be met by exceptional measures, hence the various federal, provincial and municipal housing schemes.

The sash and door men, planing mill owners, lumber men and all allied industries should get behind this movement and lend their aid, bringing all the weight and aggressiveness they can, to help translate the different schemes into revenue producing building operations. Another field for their activities is the encouragement of rural building, that is the building of houses for farmers and farm laborers. This is a problem that is only just beginning to receive the attention that it merits.

In the general specifications which were recommended, some of the items were as follows: All material for framing, roof, sheathing and underfloors shall be reasonably dry hemlock. Exposed end rafters, vertical sheathing, battens, etc., a good grade of spruce. Sheathing for interior walls and roofs 13/16 thick. All floors shall have an underfloor dressed to an even thickness not less than 13/16. Douglas fir, 13/16 x 2 1/2, free from knots, sap stains and other imperfections for the floors.

The finished woodwork, such as exterior trim, porch posts, cornices, sash, exterior window frames,

door frames and doors, shall be of white pine, thoroughly seasoned and free from sap and other defects. All millwork shall, as far as possible, be finished and assembled at the mill and delivered at the building ready to set in place.

All window frames shall be constructed for sliding or hinged sash, as indicated on the drawings. Sliding sash shall have box frames, fitted with cast iron face steel axle sash pulleys, weight boxes of the sizes indicated with removable front to pockets in the pulley stiles and pendulum in boxes for double hung sash.

All exterior and interior door openings shall be fitted with frames for hinged doors, as indicated on drawings. These frames shall be rigidly blocked, wedged and firmly secured. Frames shall be rabbeted or fitted with stops, finishing full thickness of walls or partitions where required, and arranged to receive trim on one or both sides, in accordance with detail drawings. All exterior door and window openings shall be tightly caulked with picked oakum by the contractor, and pointed with cement. After final pointing the contractor shall neatly set all weather beads.

Doors shall be the type, size and thickness indicated on details. Doors shall be constructed with solid stiles and rails and three-ply laminated panels. All glazed doors shall be provided with muntin divisions and moulded glass stops. All door and window openings to have full trim. All rooms, first and second floors, to have base with floor mould. Kitchens, kitchenettes, and bathrooms to have dado cap. 4 ft. 6 in. above floor. Dining room to have plate rail. Living rooms, halls and bedrooms to have picture mould. Stairs shall be constructed either with rough spruce stringers and finished wall, and outside strings or treads and risers may be housed into finished strings. All finished strings for stairs, first to second floor, shall be fir, with 7/8 in. risers and 1 1/8 in. birch treads. Basement stairs shall have 1 3/4 in. spruce treads and open risers and rail, where necessary.

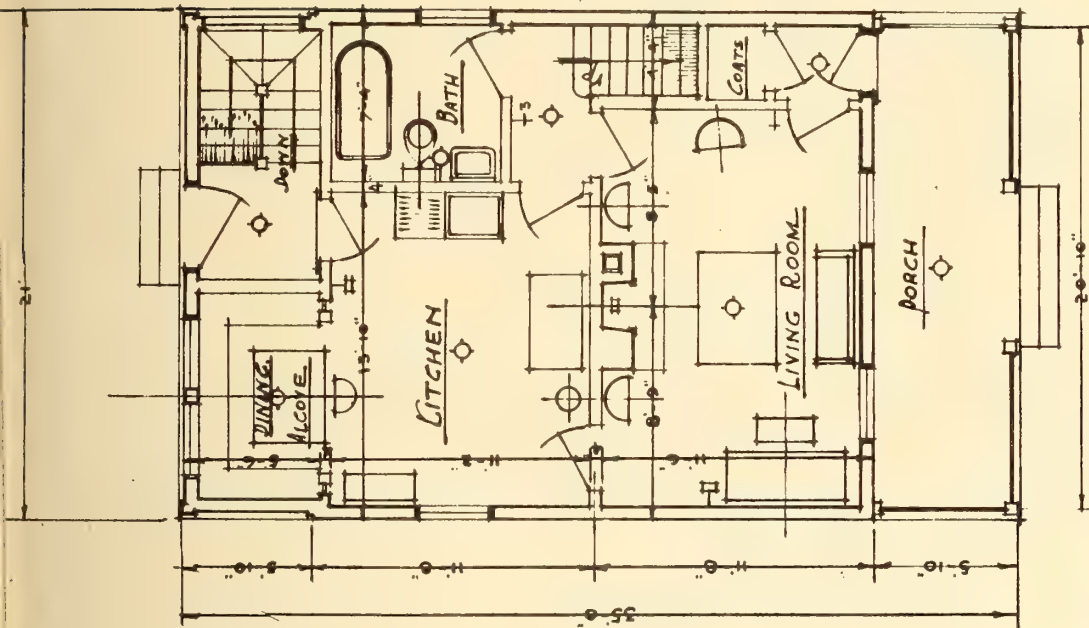
Pantries shall be provided with cupboards, or cupboards and shelves. Bathrooms shall be provided with medicine cabinets. Coat closets shall be fitted with hook strips on three sides. Clothes closets shall be fitted with hook strip along one side; also one spruce rod, 1 1/4 in. in diameter, placed as directed.

The plan illustrated on the following pages is for a five-room, detached house, consisting of living room, kitchen with dining alcove, three bedrooms and bathroom. The bathroom is located on the first floor.

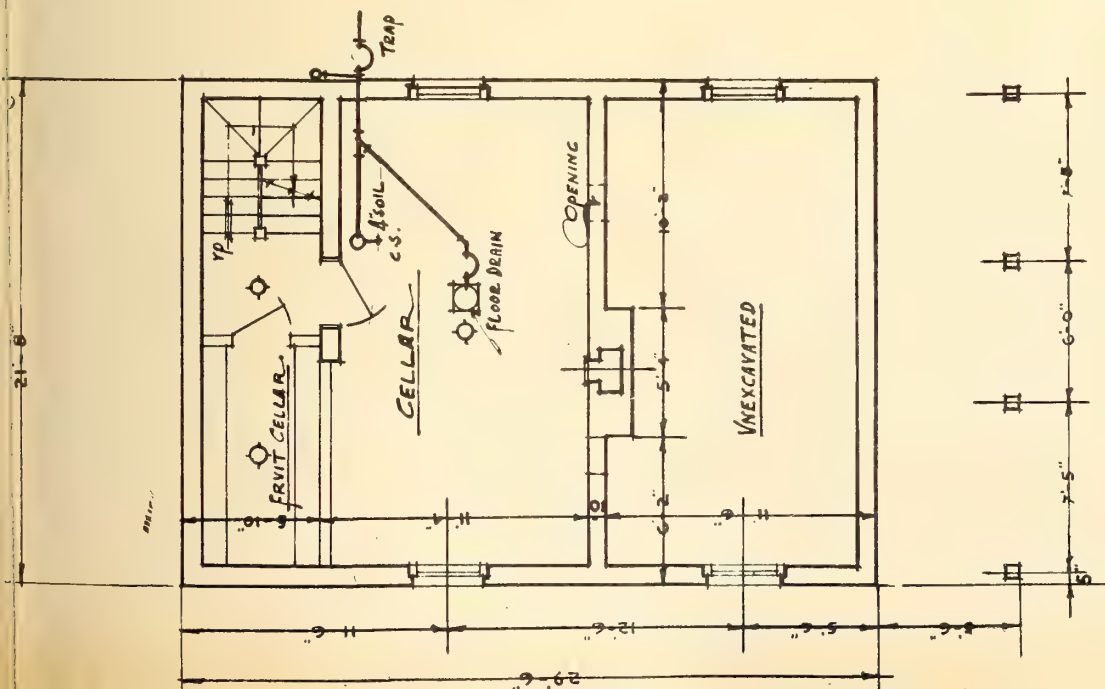
The house is of frame construction with exterior walls of shingles or clapboards, having a wide exposure. Stucco walls might be used with very satisfactory results.

The fourth drawing illustrates details of casement windows.

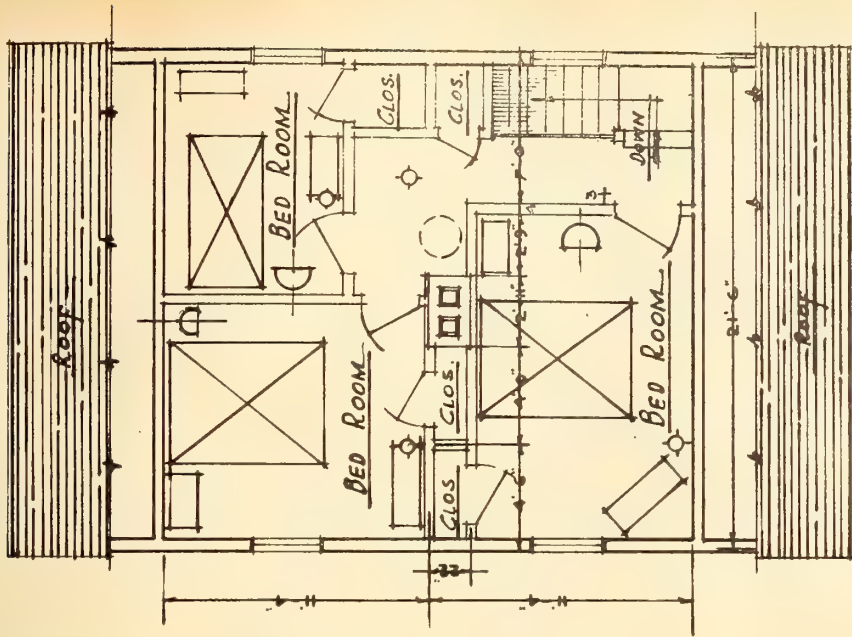
[Next month we will publish another set of plans with details.—The Editor.]



FIRST FL. PLAN.

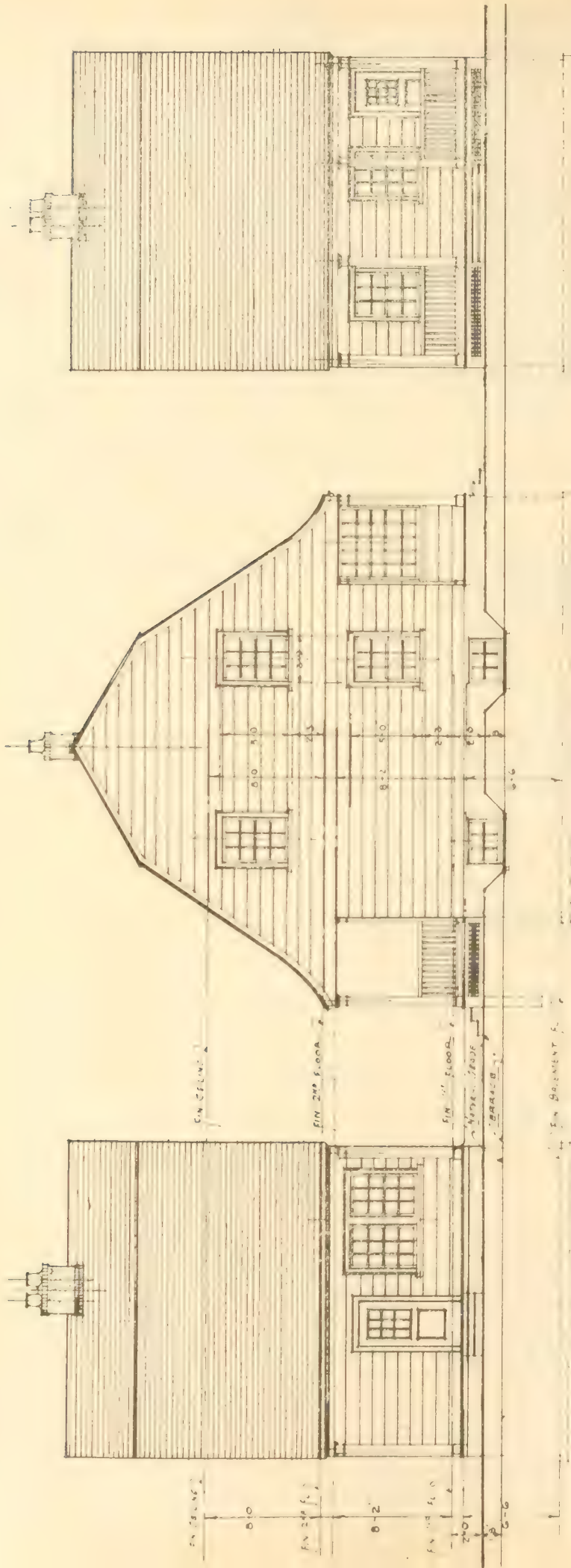


BASEMENT PLAN.



SECOND FL. PLAN.

ONTARIO HOUSING COMMITTEE.		
DATE.	PLANS	SCALE.
DEC. 1918.	5 R.M. DETACHED HOUSE	1/8" = 1'-0"
	No. 1 of 3 DRAWINGS.	D. I.

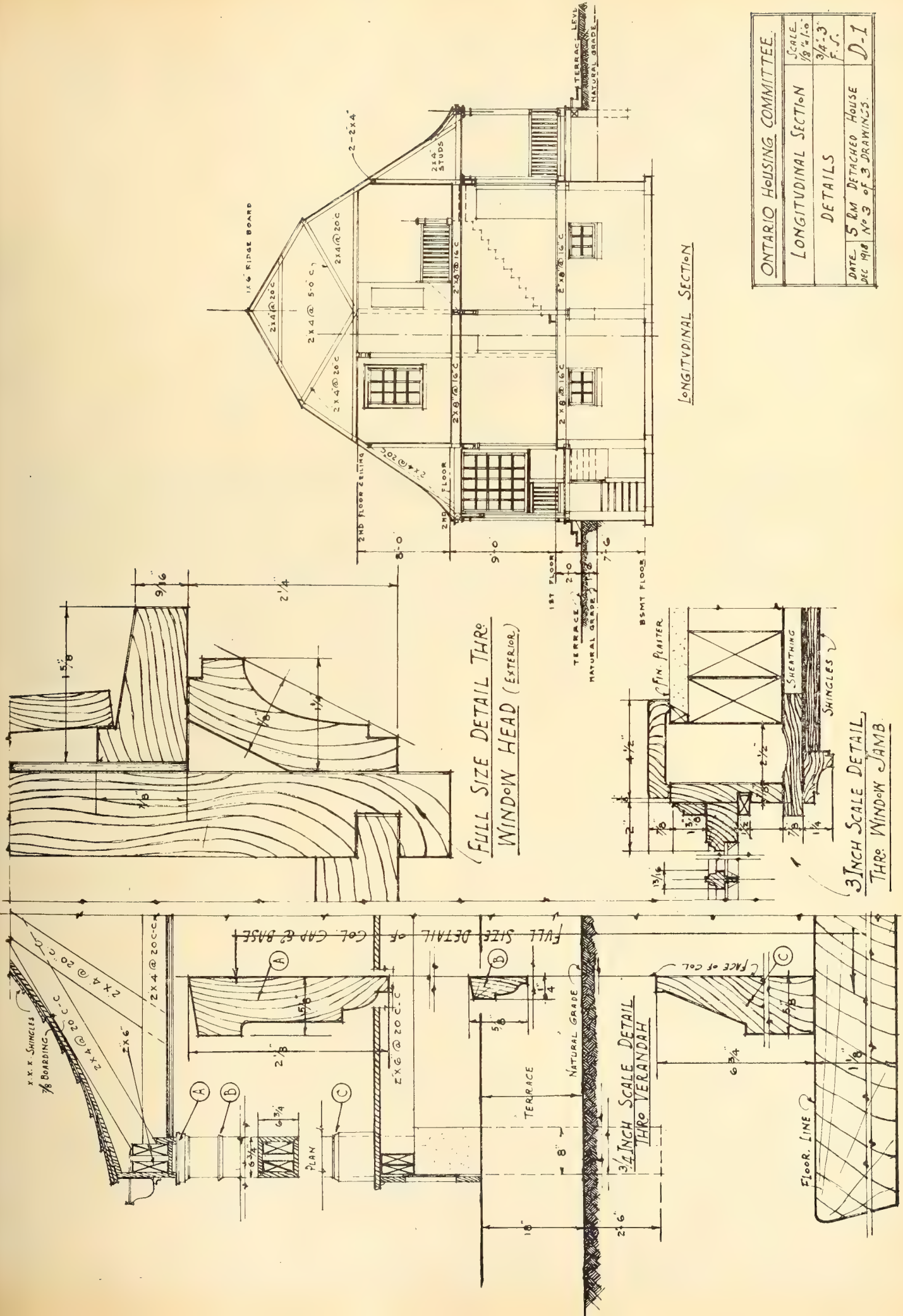


FRONT ELEVATION.

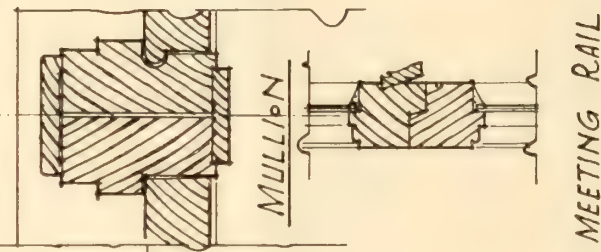
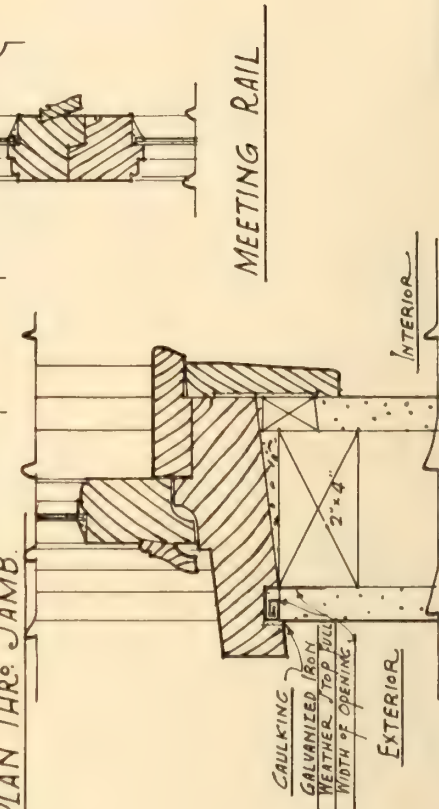
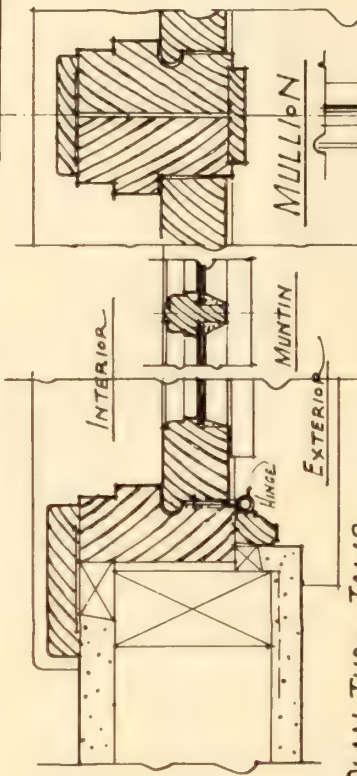
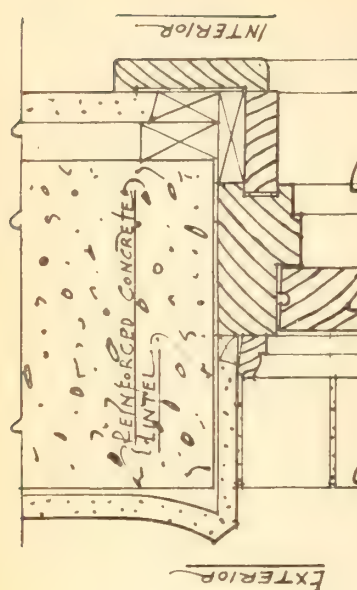
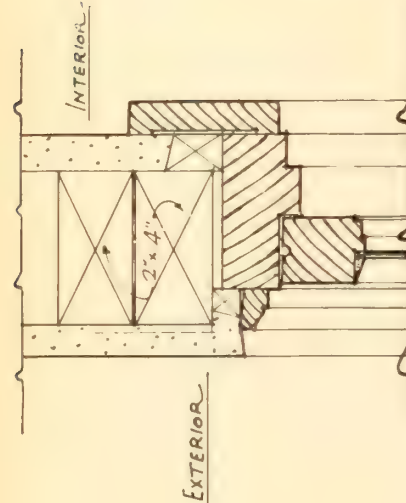
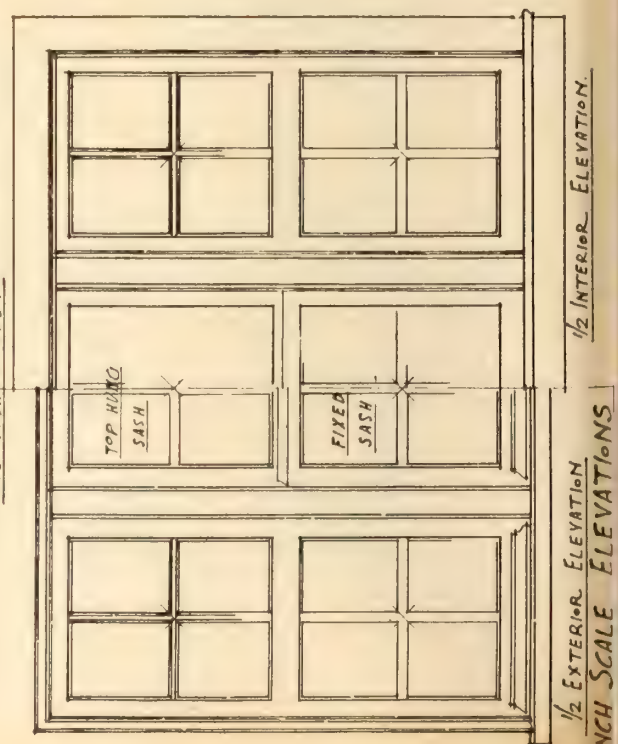
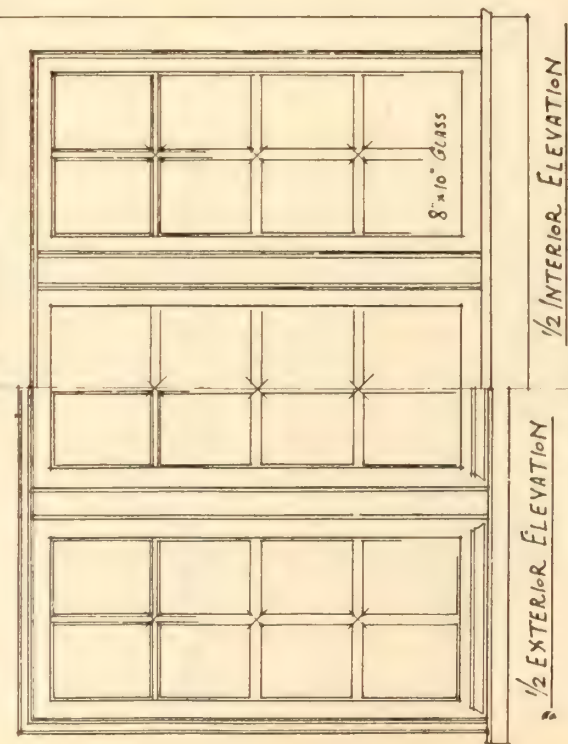
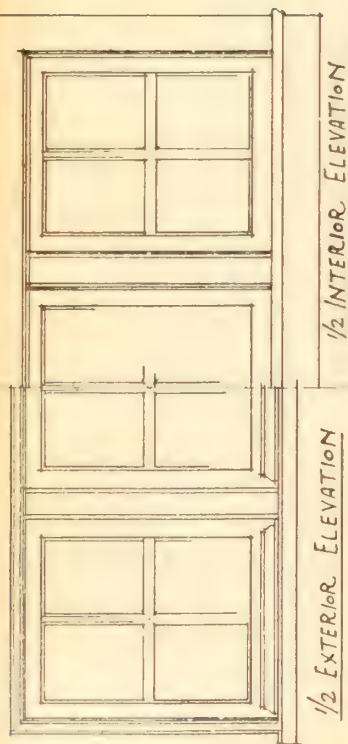
SIDE ELEVATION

REAR ELEVATION

ONTARIO HOUSING COMMITTEE.	
ELEVATIONS	SCALE 1/8" = 1'-0"
5 RM DETACHED HOUSE	D-1
DATE	NOV 2 1910
DEC 1910	3 DRAWINGS



ONTARIO HOUSING COMMITTEE.		
LONGITUDINAL SECTION	SCALE.	1/8" = 1'-0"
DETAILS		3/4" = 3'-0"
DATE	5 RM DETACHED HOUSE	D-1
DEC 1918	No 3 of 3 DRAWINGS.	



NOTES

BALLOON FRAME 2" x 4" STUDS
EXTERIOR, BISHOPRIC STUCCO
BOARD, STUCCO FINISH =
INTERIOR, LATH & PLASTER

ONTARIO HOUSING COMMITTEE		
DETAILS OF	3/4" x 3"	
CASEMENT WINDOWS		
DATE	Dec 1918	

3/4 INCH SCALE WINDOW DETAILS.

How Other Plants are Getting Results

Have Operators Specialize—Modern Machines and Methods—Little Time-Saving Stunts—Standardization of Product

In a recent issue of the American Furniture Manufacturer Duane Wanamaker in describing the plant and methods of the Murphy Chair Co. says in part: The idea in the Murphy plant has been to get good workers, pay them a wage that would make them perfectly contented (as nearly so as any worker can be) and then train them to do some one thing and do it well. They maintain that in the long run, it's cheapest to get good labor at a high price, as it is impossible to turn out volume or a good product with cheap, dissatisfied labor.

Each operation at the Murphy plant has been worked out to the point where it can now be done in the shortest possible time that is commensurate with good and artistic workmanship. This condition has been brought about largely by reason of the fact that

A "bell system" is installed throughout the plant so that when the foreman finisher, for instance, is wanted at the phone, and is not in his own department, his "ring" sounds on gongs in every department; he can go to the nearest phone and call the operator.

Each department is numbered; for instance the finishing department is number "c." This saves writing "finishing department" on invoices for supplies charged to that department, and otherwise saves time of bookkeepers and clerks.

The saw-dust waste is all sucked up by pipes over each machine, and is collected in one big bin and sold to furriers at top prices.

Conveyors carry the chairs on long stretches through the building, and dummy elevators take them from one floor to another.

Safety-first bulletins are prominently displayed throughout the building.

Lighting for Efficiency

Another manufacturer, in an endeavor to increase production and better working conditions, painted the walls and ceilings of his factory a pure white, and the transformation was such that the interior was hardly recognizable. Instead of being dull and full of shadows it was bright and cheery. Not a dark corner was to be found. The effects were immediately noticeable. There was less spoiled work, and this applied more particularly to delicate operations requiring the best of light. The workmen were more cheerful and contented. They took a greater interest in the plant and helped to keep it spick and span.

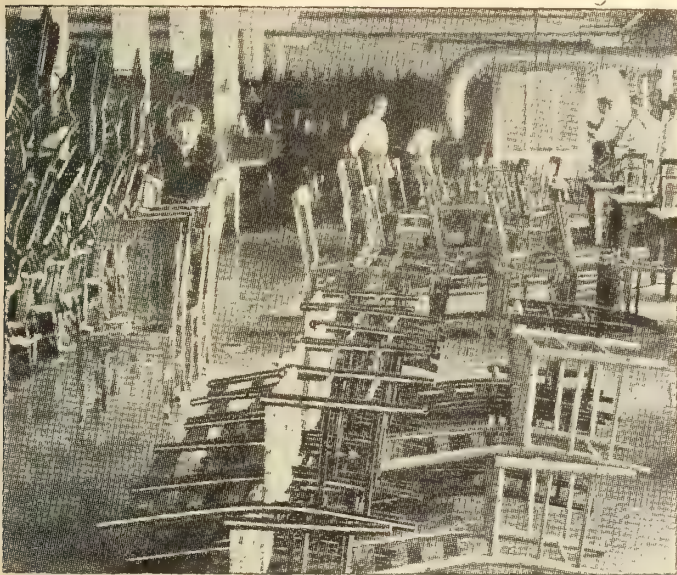
There was a direct saving feature as well, for a room or factory finished in white requires less artificial lighting. Not only fewer lights, but for fewer hours. On a dull or cloudy day a plant with the ordinary dull walls and ceiling may find it necessary to use artificial lighting during the whole of the day, whereas a plant with the interior finished in white would not need any lighting aids.

Another suggestion is to have a clean, bright reflector attached to every light in the shop, and make it a point to see that the globes and reflectors are kept clean and free from dust.

Simplifying Sticker Work

A certain furniture producer found that he could turn out more work and effect a considerable saving by standardizing his sticker work. As far as possible he made all stiles and grooved stock the same thickness and made the grooves of a uniform width and depth. Any moulds or heads that were required in quantities were standardized as well. Then he provided extra side heads for the different jobs and where necessary milled cutters for the top and bottom heads. The result was not only an immense saving of the time ordinarily required to set up on the different classes of work, but his product was uniform at all times. By using the special and milled cutters a saving was made in the time required to keep the knives sharp and in proper shape.

When you get down to rock bottom, that's a good solid starting point to begin again.



Finishing room showing oiled floor

The Murphy Company pays by the piece altogether, and has one man do a certain job, and that only, giving him as aids the most modern machinery known to the woodworking industry, and plenty of "elbow room." For instance in the assembly room there are men who do nothing but put spokes in the otherwise completed chairs. When they make a grab at the pile of material at their elbow they always get a spoke and not something else. Because there are not eight or ten other parts lying around for them to make "false moves" over while looking for the particular part they wish to put into the chair. Around them are piled nothing but chair spokes, and hence they can reach for and put these pieces into proper position with the utmost facility. "It all helps to get quantity production," the superintendent said to me.

The floors are all kept oiled to facilitate pushing a string of chairs over them. All of the long passages between departments have steel carpets. This saves wear and tear on the floor, and a string of chairs in process can be pushed by a woman from one room to another in a jiffy without involving a strain upon her strength.

The Necessity of Good Routing System

Eliminates Hunting for Lost Items—Facilitates the Handling of a Large Number of Jobs—Accurate Track of all Material Going Through Factory

By Wm. Webb

In these days of highly organized and systemized manufacturing one would think that the last word had been written about system, and that any man who is holding a responsible position would naturally be conversant with the best system to use, in order to get the greatest production, combined with the best workmanship that his particular department is capable of giving. Some system or other must be used or things will not run smooth.

In furniture manufacturing particularly, where there are so many small pieces to keep track of, endless trouble is caused and much time wasted. I am sometimes afraid that the Kings English is often murdered, all because there is no system to rout the material through the factory.

When a Routing System is Absent

Jobs are given to the breakout man, and after that they take pot luck, and probably about three months later, some of the items on the bills begin to arrive in the cabinet room. Another month passes, and perhaps 90 per cent. of the items are ready for the bench. Where are the other items that the bill of material calls for? There is one item lying at the band saw, another in a barrel stowed away because nobody knew what they were. After hunting for an hour or so, you conclude that one or two of the items had probably gone to make steam, so you get them out once more. Eventually, the job is complete, and the bench hand takes hold of it and everything is O. K. for about five minutes. The same thing has to be gone over again on the next job and so on ad infinitum.

Now there is not any system that is perfect, but any system that will take away some of the unnecessary trouble that infests woodworking plants is worth while trying.

Where System is to be Found

In the largest furniture factories in the United States they have what they call a routing system. The big Geo. McLagan factory in Stratford has adopted this particular system and no doubt it is working alright. In order to give the reader some idea of how this system works I will ask him to accompany me to the McLagan factory. First, you must understand that this particular factory employs some hundreds of hands, makes high class furniture and have around 200 jobs passing through at the same time. How can all those jobs go through without causing endless confusion, and becoming all mixed up, especially when some of the bills of material contain seventy items.

We arrive at the factory, some factory. About ten acres by the looks of it. We go up to the office, and ask for the superintendent. Bye and bye, a very genial gentleman comes along, and asks what he can do for us. I tell him that my friend is Mr. Constant Reader of the Woodworkers, who would like to know how he keeps such a big plant running without getting things mixed up. We are told that the system they have keeps things moving and in their proper order.

Next we are introduced to the man who has charge of the routing system. He is a short thick set man

with a sandy moustache, and seems to take a great deal of pleasure in explaining the work in which he is engaged. I must admit that he has reason to be proud of his part in the making of furniture. He picks up a number of bills of material and tells us that there are some of the jobs that are in process of manufacturing. He asked us to take any bill, pick out any item on it and he can tell us just where that item is, what has been done to it, and the cost up to the night previous.

Giving it a Test

Mr. Constant Reader seemed to doubt his ability to do this seemingly impossible thing. To test him he took a bill at random, reached for his scarf pin, shut his eyes, and jabbed the pin into the bill. "Where's that item?" he asks. The bill was for a fancy table and the item he jabbed his pin through was for two drawer fronts, 6-in. by 2½-in. by ¾-in. A pretty small thing to find in such a big factory, but our friend of the sandy moustache didn't seem to be fussed up at all. He took a book down, turned to a certain page, and in ten seconds told us that those drawer fronts were on a car at the shaper waiting to be shaped. There had already been eight different operations on these pieces, and the cost up to date was four cents each. "Some system," says Mr. Constant Reader.

The routing gentleman told us that we could take any of the two hundred bills, take any item, and he could tell us where they were. "System, my boy, system," and we could see he took a pride in his work.

We went through the plant, and when we arrived at the shaper, he says. "Those drawer fronts are around here some where, and out of all that stuff that seemed to be piled any where and any how he found those small 6-in. by 2½-in. by ¾-in. drawer fronts.

Some people say that that may be alright for a big factory, but in a small one you don't need it. But I claim that a system that keeps track of 10,000 items in McLagan's would keep track of the items in the small plant, and both time and money would be saved. The factory, from the kiln to the shipping room, would run as smooth as that famous well-oiled machine that we read so much about.

Wood Products for Export

Efforts are being made to create an export demand for such Canadian made products as woodenware, furniture and chairs, folding chairs and tables, swings, children's furniture, ladders and camp furniture, etc. It is expected that considerable business will be secured in Great Britain and other parts of the British Empire.

Many enquiries have been received by the Department of Trade and Commerce for folding chairs and tables, draught screens, etc. At present a number of British wholesalers are looking toward Canada for certain wood products. In Australia a good market is believed to exist for wash-boards and other lines of woodenware.

An Aid to Accurate Cost Accounting

**Specially Trained Men Essential—Actual Time on Each Job Not Easily Kept
—Foreman Cannot Give Sufficient Time**

By Geo. H. Hawley

Every one who is interested in any line of manufacture will agree that a system of getting at the actual cost of production of the articles manufactured is all important and that the system should be a thorough and accurate one is most important, for what is the use of wasting the time keeping the cost of the work only to realize that a good deal of it is guess work. That is more unsatisfactory than not keeping the cost at all.

In the first place it is essential to appoint a man to put the system through the factory and it should be a man who is familiar with the work, of course, he can get a good deal of help from the foreman, but the foreman cannot possibly look after an elaborate cost accounting system, that is entirely out of the question. The average foreman today must look after from 25 to 50 men and he must lay out the work for them, make their patterns and forms, set up machines for the men who are not used to the work, keep the machines in repair and follow the different kinds of work, of which there are some times a dozen going through the factory, check their piece work, make out the bills for the goods and a hundred other things that crop up in the course of each day.

Tags Often Left Behind

It should be evident that the foreman should not have a cost accounting system put onto him along with every thing else. If it is then there can be nothing but confusion resulting and errors in the cost, particularly in the time, as men will get time charged up to the wrong job and then what is the use of the system. In the first place tags are made out with a bill of stock and the job number on it. These are given to the stock cutters, when they have cut the bill they hang the tag on one of the pieces and it goes to the next man who perhaps faces it and leaves the tag hanging on the stake of the empty truck. When the stock gets

to the next man the tag is missing. Then sometimes the bill of stock on the tag calls for material enough to fill two or three trucks and there is only one tag for the lot it is quite necessary that there should be some one to see that each man gets his time correctly. It is often the case that some of the men can neither read or write and can hardly tell the time of day, then it is absolutely essential that a cost system man should be there to make a record of such a man's time for him as it is certain that being unable to do it himself, and if it is left to some of his fellow workmen to do it for him, it will surely be done wrong.

Particularly is it necessary to have careful supervision when there is, we will say, eight or ten different jobs each with a number of its own going through the factory at once. Some of the men work any where from fifteen minutes to two hours on each job it is quite possible for a few of the oldest and most experienced hands to get their time correctly recorded on their time card but it is also quite impossible for a good many others to get it right.

Will Trust to Memory

A good many men, if not closely watched, will wait till just before six o'clock to set down their time on the day's work trusting to their memory for the time worked on each job and this will result in error. It is plain that the foreman who attempts to do all this in addition to his regular duties will be a very busy foreman and the correct amount of time worked on each job will not be obtained. Getting the correct cost of the material is a comparatively easy matter, but it is the time which is difficult especially when as is often the case some jobs are the better part of a month going through the factory. It is plain to be seen that it will give one good man all he needs to do to get the real cost of all the work going through without any guess work about it.

Technical Education on Practical Lines

**Valuable Experience to be Gained Under Actual Shop Conditions—Commercial
Articles Should be Made—Room for Improvement**

By R. D. R.

The subject of teaching the apprentice is a very important one and one to which much thought should be given.

Mechanical men, instructors and others could express variant views that might be feasible. Difference of opinion makes this possible. Methods of applying instructions could be mentioned by a group of efficient men that would cover a large field, but to my mind, nevertheless, many are teaching, who, through lack of practical experience, are not capable of giving practical instructions. It goes without saying that an instructor is only as practical as his experiences have trained him to be.

Under present day methods of production it is seldom that an apprentice is given sufficient instruction

to make him a thorough, competent mechanic. We might discuss here why these conditions exist. When a man is hired these days, results are expected of him, and it is up to him to get them. This means naturally that he is going to look out for his own interests. He is practically forced to do this by the shop system, be it day or piece work, the latter being almost entirely adopted by modern manufacturers. Under these conditions one can readily understand that a man is not going to lose his time and money by posting an apprentice.

Results Are Looked For.

From the manufacturer's point of view, when an apprentice is hired, it is usually done with the object of securing a helper and, as all business is on a com-

petitive basis, results are expected from this apprentice at the start. This, in turn, tends to make the beginner mechanical in certain lines, and eventually he becomes a cog in our machine of production. The result is without a doubt evidenced by the class of work produced in our country to-day. A great number of so-called mechanics do not seem to know what a finished article really is like.

In view of these facts it seems that we have one and only one alternative and that is, or should be, our technical schools. What do we find them doing toward training practical men for the future? Do any of them teach the art of cabinet making? Have any of them turned out competent mechanics? If so I have as yet to hire one. It is possible that these students have gone beyond the factory stage and become instructors.

Shop Conditions in Schools

My opinion is that in the technical schools it is necessary to make many of our commercial articles, and do it along the same lines that would be followed in an up-to-date factory. Educate the student the same as the apprentice and teach him under actual shop conditions the system followed in putting the work through its various operations, teach him the labor-saving features of modern machinery, the dangers encountered in its operation, the importance of well kept tools, the value of being able to read blue prints, not necessarily to make them, and the condition of the material to be fabricated.

Realizing the importance of the veneers that are now being used so extensively, why not use them in our technical schools? If the instructors are not competent in the use of veneer get some that are. Veneers are here to stay and the beauties of their highly finished surfaces are not to be imitated by graining or any other method in use to-day.

A student cannot be taught very much along practical lines by simply making a box or cabinet or other minor article. He must be taught by the most up-to-date procedure that exists in our shops to-day. Many are behind the times with their equipment and this should be pointed out and explained as well.

It is true, and I have found it so in many cases, that many good workmen were paid less than men with no mechanical ability at all. This is very discouraging and does not give much of an incentive to the younger men who set out to learn a trade and who daily meet others who, through friends or by the gift of speech, become their superiors. Speaking for myself, I have found that my merits as a mechanical man have been my best assets, and thanks are due the men who, during the first five years of my joinery, spent their time for my benefit.

It is the experience thus gained that has enabled me to hold a number of good positions and that has enabled me to speak with confidence in my field of work. I also believe that practical experience is progressive, and I for one am a booster for practical technical education.

The Value of Sanders in the Chair Factory

A Very Efficient Machine—Production of Small Parts Increased—Lessens Hand Labor—Materially Reduces Number of Operations

By C. L. Walker

As one of the greatest costs in the manufacture of chairs lies in the sanding, manufacturers would do well to always be on the lookout for means to reduce this expense. This can be done principally in two ways, as costs are largely controlled by both equipment and workmen. Careful workmen, men who are watchful for some chance to cut down production costs, are invaluable. But to secure their co-operation lies entirely in the hands of the manufacturer. However, the matter of equipment (the sanders) is open to demonstration and comparison.

Without doubt, the endless-bed type of sander is the most valuable sanding tool made for the average chair factory. This statement expresses the opinion of every chair manufacturer who has installed this machine, and is directly open to proof through reference to these manufacturers themselves.

Some manufacturers, however, while aware of the enormous capacity of the endless-bed sander, have not associated this with delicate work as their product requires. A few others think, because their goods require the finest finish, that they are forced to pay the higher price of slow service. They think because many pieces can be run through together on the endless-bed machine, that every piece will not be as well sanded as where each individual piece is sanded separately on the belt sander.

Exactly the opposite is true in both these cases. In the first place, as the entire bed surface can be kept full of stock, the smaller the pieces the greater is the proportionate capacity. In the second place, as both

the slightly yielding bed surface and the drums can be adjusted with the finest precision, every piece is perfectly sanded.

While it's true that there's always considerable hand sanding necessary in the finishing of chairs, this is taken care of after the chairs have been put together and in no way affects the choice of machines. When the sanders have done their work, the parts are assembled, passed through several other operations and finally lightly sanded by hand with fine paper just before the paint is applied. On cheaply finished chairs no further sanding is required. On more expensive work, the chair is allowed to dry and is sanded again to take out the lumps in the paint. This operation is repeated until the desired finish is secured.

But as before stated, the real sanding has been done before the chair parts have been put together, and up to that time no hand sanding should have been necessary. Exception is made on very fancy curved or irregular parts, where special machines or hand work is required. But on the great bulk of chairs and chair parts, only two machines are necessary, namely, the endless-bed sander and the belt sander. The belt machine is useful on the few curved parts and should be confined to that work, as it is a very expensive machine to use in comparison with the endless-bed tool.

Fewer Operations Necessary

Take for instance, a simple chair composed of nineteen pieces. Most of these parts have to be sanded on all four sides. This makes, in all, nearly 80 surfaces to

sand. Where the belt machine is used, two sandings of each surface is necessary. This is because pieces have been planed and fairly coarse paper is first required to rough down the parts, after which fine paper is used for the finish. Two sandings of 80 surfaces makes a total of 160 separate sandings. Think of the repeated handling and rehandling, of the time required and of the expense this requires, yet this is done every day and is absolutely necessary where only belt sanders are used.

On the other hand, the endless-bed machine, at the outset, cuts this time and expense in half by the very nature of its construction. At one sanding on this machine stock receives the benefit of three separate sandings such as the belt machine would give. This is owing to the three drums, each of which carries a different grade of paper. This first drum carries coarse paper which takes off the rough marks left by the planer. The second carries finer grit which removes the sanding marks caused by the coarse paper. The last drum has fine grit and puts on the finishing touches.

Already, by the use of the endless-bed machine, economy is shown to have doubled. But this is only the beginning. Compare the following results. Where one piece goes through the belt sander, the five chair slats go through the drum machine together. As also

do the back and lower slats, the front casing and the flat spindle, the two front posts, the five stretchers, the broad flat sides of the two back posts and the flat part of the seat. Only the curved sides of the back posts should be sanded over the belt, and a special sliding table is necessary to finish the sunken part of the seat.

More Effective Than a Belt

In seven operations every piece in the chair has gone through the drum machine, while nineteen are required on the belt machine. Considering that all four sides of the pieces must be sanded, this gives an advantage of 28 operations to 76. Adding the double advantage which the three sizes of paper give, the advantage favors the drum machine in the proportion of 1 to 8. In other words, endless-bed sanders, on the average chair, are eight times as effective as belt sanders.

In reality they are even more economical than this, because in the case illustrated only one chair was taken into account. In actual work the drum machine would sand, at one time, the corresponding parts of a number of similar chairs, and so still further increase its capacity over the belt sander which could only retain its "speed" of one piece at a time.—Yates Quality.

Report of Stratford Conciliation Board

To effect a settlement of the differences that arose between the Stratford furniture manufacturers and their employees a conciliation board was asked for. After holding a number of meetings and thoroughly looking into all questions that came up for discussion this board rendered the following report:

In the matter of the industrial disputes investigation Act of 1907, and re the differences between the members of the Furniture Manufacturers' Association of Stratford, Ont., and certain of their employees:

To the

Hon. G. D. Robertson,

Minister of Labor, Ottawa, Ont.

The Board of Conciliation constituted in this matter, and consisting of His Honour Judge D. McGibbon, retired judge, chairman appointed by the Minister of Labor; Mr. J. F. March representing the employees, and Mr. Joseph Orr, representing the employers, beg to report as follows:

The members of the board having taken the usual oath of office, held a preliminary meeting at Toronto on Monday, January 13th, 1919, when arrangements were made to proceed with the investigation of the matters in dispute, at Stratford, Ont.

Matters agreed upon to be discussed between the parties referred to, were the following:

1. Hours of labor.
2. Overtime.
3. Wages.
4. Strikes.
5. Slack periods.

A meeting of the board was subsequently held at Stratford on Monday, January 20th, and on February 3rd and 4th; at the preliminary meeting it was agreed that the negotiations should be conducted informally, each member of the conference to have the privilege of giving evidence or asking questions bearing upon the matters in dispute.

The differences in dispute between the employees

and employer as enumerated in the preceding portion of the report, were discussed freely, the men and their representative urging an increase in wages, as well as a shorter working day, together with time and a half overtime.

The manufacturers stated that they believed that they were paying as high, if not higher wages than were generally paid by their competitors, and to impose a higher rate of wages than they are now paying, would place them in a position where they would be unable to place their goods on the market in competition with their competitors. The board then decided to investigate this statement and to hold meetings, having the following places as centres of each district, —Hanover, Kitchener and Montreal.

Hanover meeting was held on Feb. 18th, and was attended by all furniture manufacturers in the Northern district of Ontario, with their schedule of wages as of the week ending Jan. 31st, 1919, and which was presented to the board. At this meeting the following resolutions were unanimously adopted:

1.—That the Northern Ontario Section of Furniture Manufacturers represented, make a suggestion to the Conciliation Board, of a maximum working week of 54 or 55 hours with a weekly pay based on present pay of 59 or 60 hours as the case may be, providing same becomes general with the furniture manufacturers throughout Canada.

2.—That this Northern Ontario Division of Furniture Manufacturers recommend that should the new hours of labor be adopted, time and one-half be paid for overtime when entire factory is operating under power, but not otherwise.

Manufacturers of the Central Ontario District appeared before the Conciliation Board at Kitchener on Feb. 20th, and presented their scales of wages, and at this meeting the resolutions passed at Hanover, were likewise unanimously adopted.

On Feb. 25th and 26th, the manufacturers of Que-

bec appeared before the board at Montreal and after considering Hanover and Kitchener resolutions decided as they were not of unanimous opinion, not to commit themselves by any declaration. Schedules of factory wages were, however, filed.

A further meeting of the board was held in Stratford on Tuesday, March 4th, at which representatives of both the employees and employers were present. At this meeting Mr. Joseph Orr, representative of the employers, reviewed what had been accomplished by the board in the investigations held at Hanover, Kitchener and Montreal, which showed that a very wide difference existed between wages paid in different furniture centres, Stratford paying among the highest in the industry. After a lengthy discussion on some of the points of difference, it was finally decided to hold a further meeting on Friday, March 7th.

On March 7th, representatives of both employees and employers met, and after hearing evidence and representations made by all parties concerned, the board endeavored to bring about an agreement as to the matters in dispute, and is able to report the successful issue of the negotiations, insofar as one manufacturer and the employers are concerned, which resulted in procuring the agreement, annexed hereto. The other furniture manufacturers of Stratford, being parties to the above dispute, have agreed to and will put into effect as on February 3rd, 1919, Clause 3, 4 and 5 of the agreement annexed hereto.

In concluding our report, we would draw your attention to the fact that the plan of procedure adopted by your board in dealing with this matter, was in keeping with the policy recommended by you in your recent address delivered in the Labor Temple, Toronto, when you advised that disputes between employees and employers could be dealt with more advantageously when taken up as complete industries. Having followed this course in dealing with the investigation, we are pleased to report that the results obtained have been successfully to a point beyond our expectations, inasmuch as to the points agreed upon by the Stratford manufacturers and their employees are likely to become effective throughout the entire industry on May 1st, of this year, which would affect approximately 11,000 employees.

The final meeting of the board was held in Toronto on the 19th and 20th days of March, 1919, and it is a matter of great satisfaction to the members of your board to be able to report that a mutually satisfactory adjustment of the matters in dispute were agreed upon, the particulars of which have been fully set forth above.

The Board of Conciliation is of the opinion and would recommend that an Industrial Council, such as

the Whitley Council in Great Britain, be instituted by the government, with the consent of the Furniture Manufacturers' Association of Canada and the Labor Unions representing the employees, to discuss, and if possible, to settle all disputes or differences between the manufacturers and their employees.

We have the honor to be, sir,

Your obedient servants,

Commissioners.

Terms of the Agreement

1. Agreement between the Globe-Wernicke Co., Ltd., of Stratford, Ont., and, 1st, their several employees, 2nd, Local Union 1990 United Brotherhood of Carpenters and Joiners of America, and 3rd, Local Union 772, Painters and Decorators.
2. This Agreement to become effective as from February 1st, 1919, and remain in effect until the first day of October, 1919, and from year to year subject to thirty days' notice, prior to October 1st, by either party to this agreement.
3. Hours of Labor: Nine hours shall constitute a day's work; same to be performed between the hours of seven a.m. and five p. m., except on Saturdays during June, July, August, when the hours shall be from 7 a.m. to 12 noon.
4. All work in excess of above shall be paid for as follows: after five p.m. at nights, after twelve noon Saturdays during June, July and August, Sundays and all legal holidays recognized by the Dominion, time and one-half, but it shall not be considered over-time unless when one or all departments are asked to work extra hours.
5. Wages: Wages to be paid shall be adjusted so that the employees will receive for 54 hours work, an amount equal to that which was being paid for 59 hours.
6. Strikes or Lockouts: In case of disagreement over the interpretation of this agreement, or other causes, there shall be no cessation of work until the highest representative of both parties have failed to come to an understanding.
7. During slack periods preference shall be given to reduction of hours of work, rather than a reduction in workmen who may be looked upon as members of the permanent staff.
8. This agreement applies only to those working on an hourly basis of wages.

Dated at Stratford this 7th day of March, 1919.

Signed:

Thos. L. Clancy.
S. H. Vanstone.
R. H. Bezze.
B. R. Parker.

The Globe-Wernicke Co., Ltd.
James J. Mason, pres.

Two Attractive Cabinets of Enemy Origin

Joins Tenoned and Pinned Together—Carvings Well Executed—Lock and Hinges Clumsy—Natural Age Finish

By Bomb. H. B. Beattie

This old cupboard I came across the other day while looking for something else entirely. Having a sketch book and a folding chair maker's rule handy, I thought it well worthy of an attempt to lay it before you in "Elevation."

In the first place the cupboard is genuinely "old" there being scarcely a straight edge anywhere. All the mouldings are cut by hand. There is no evidence of glue of any sort and all joints are tenoned and pinned

together. The front posts are "shaped" rather than turned and are not as true as might be. The drawer pull is a simple affair of wrought iron and the door above has no pull or knob, whatever, only a very lengthy key hole, minus the key.

The carving on the door and side panels is well executed and is sunk in both instances about 5/16 in. below the face. The ends of the case are carved in a peculiar flat, fluted pattern, as well as the back panels,

below and under the drawer. Total height from the floor is 61 in., width of top 35 in. and depth from front to back of case is 17 $\frac{1}{4}$ in.

Shows Signs of Age

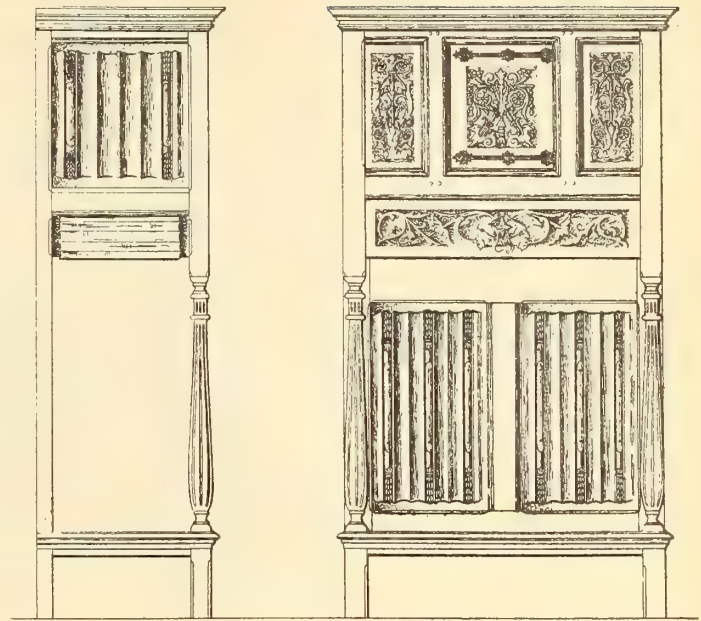
Many are the marks of age and decay that appear all over the old cupboard and which are not reproduced in the drawing. For instance, the right hand end of the drawer front is considerably eaten away and "holed" by worms. A three cornered piece is set into the front rail just above the drawer pull. A long wide "check" runs up the door, almost in the centre, the long iron strap hinges prevent it from breaking in two.

The great feature of the whole thing is the beautiful brown color the oak has taken on. The most pleasing shade I have ever seen, just like a big brown chocolate on the shaded sides, makes you feel like taking a bite out of it. What the old cupboard was originally used for, I don't know. The present owner just keeps it standing in the North Room, a place of honor to a piece of furniture, as Westminster Abbey or St. Paul's is to a man.

A Fine Silver-ware Cabinet

The accompanying elevation sketch partly illustrates a fine old silver-ware cabinet, belonging to one of the larger houses on the west bank of the Rhine. This piece occupies a prominent corner in a large room artistically furnished with "antiques" ranging from wierd Chinese urns, old furniture, exquisitely inlaid, to an Egyptian mummy, on guard apparently, in the corner gazing dreamily out over the broad Rhine.

This cabinet is 84 in. high, length of top 34 $\frac{1}{2}$ in.,



— End Elevation — — Front Elevation —



An antique hand-made cupboard

depth 14 in. Depth of lower part of case is 13 in., while depth of the upper part is 10 in. Height of foot off floor 4 $\frac{1}{2}$ in.

The whole inside is lined with velvet or plush of an olive tint and the four glass shelves have mats of the same material. The workmanship is good, though the hand carving is not so finely executed as English work. The overlaid beading on the glass doors is cut by hand. The locks are, of course, clumsy in comparison with the mortise locks of today. The hinges, too, are of heavy iron and are shown considerably reduced on the drawing.

There is no artificial finish to the wood, which is oak and it has simply turned to a comfortable brown shade. Time did not permit a faithful reproduction of the intricate hand carving, but the main facts are accurate in every detail.

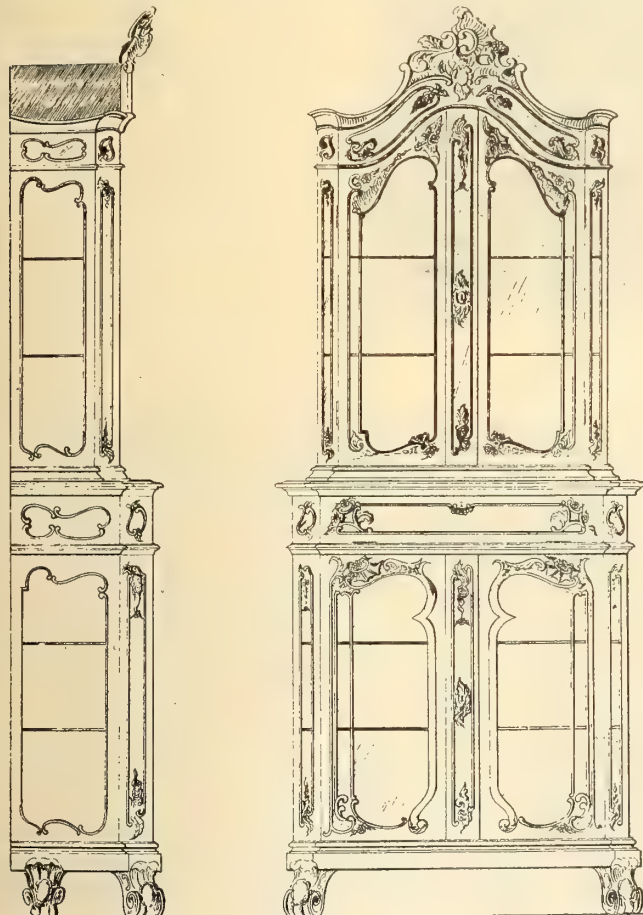
Returned Men for First Aid

General Gunn pointed out at the Fifth Annual Meeting of the Ontario Safety League that the returned soldier has valuable first-aid information, which was intended to assist him in saving life on the battlefield. You can take advantage of this and have your employees who are returned men render good service in this way.

Canadian Ready-Made Doors in Britain

Some apprehension has been felt among exporters of Canadian-made doors to the United Kingdom regarding the reported attitude of some of the British trade unions toward these products. From inquiries made, however, it appears reasonably certain that there is no hostility among British unions toward Canadian-made doors, but the unions insist on doors being made by union labor and as such certified by the importers.

There is no reasoning with a person who has jumped to a conclusion.



A heavily carved silverware cabinet

A Modern Wooden Pipe Plant in B.C.

Serviceable Pipes of Wood Made in Any Size—Modern Labor-Saving Equipment—Variety of Lines Produced

One of the most interesting branches of the wood-working industry and a comparatively new one in Canada is the manufacture of wooden pipes. Prior to 1904 wood pipe was imported in small quantities from the United States. Wherever this pipe was used it gave entire satisfaction so that through time a demand was created that warranted the establishment of plants in Canada to engage in the manufacture of this product.

In August 1904, the Canadian Pipe Company, Limited, Vancouver, was incorporated to carry on the manufacture of wooden pipe and similar lines. As the good features and advantages of this product became more widely known the demand increased so rapidly that the company were forced to seek larger premises

stalled some special tank making equipment. No expense has been spared in the plan or equipment of the factory to insure the production of a high grade output at a minimum cost.

The layout of the plant is such that a considerable saving of labor is effected. From the storage sheds where the cars are unloaded the lumber goes to the stickers, here the staves are shaped to suit any size of pipe that may be required. Next in line is the wrapping machine, this machine rolls the spiral wire binding on the pipe, under very heavy pressure. The wound pipe is now at the tenon "header." This is a special machine of their own design and accurately tenons the ends of the pipe. The next operation is to dip the pipe in a special mixture of hot asphalt and



Interior view showing sticker running pipe stock

and in 1910 they erected and equipped their present up-to-date plant.

Indicating the development of the wood pipe industry in Canada, during the year 1912, only eight years from the time that the first Canadian pipe was made, the total sales amounted to 1,969,000 lineal feet or about 321 miles of wire wound and continuous wood stave pipe. Other lines manufactured in addition include wooden storage tanks, stand pipes, flumes, reservoirs, silos, water tenders, etc.

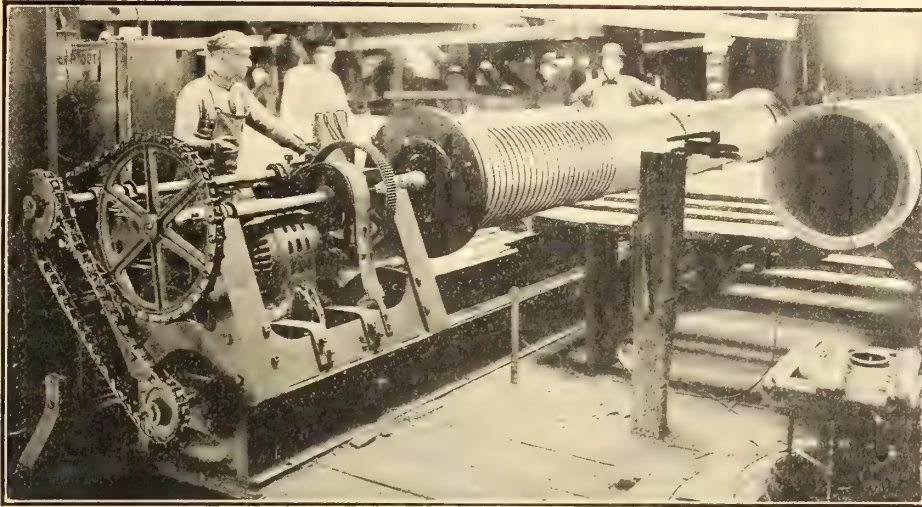
The site occupied by the plant is 325 ft. long and 200 ft. wide. The best of trackage facilities are enjoyed, there being trackage the full length of the property and arrangements have been made for the loading and unloading of cars under cover.

When the present plant was built in 1910 it was equipped with two complete lines of pipe making machinery. A roadway, 20 ft. wide, runs between these lines for the full length of the factory. Owing to the unexpected demand for tanks they were forced to make a few changes in the layout and in 1916 they in-

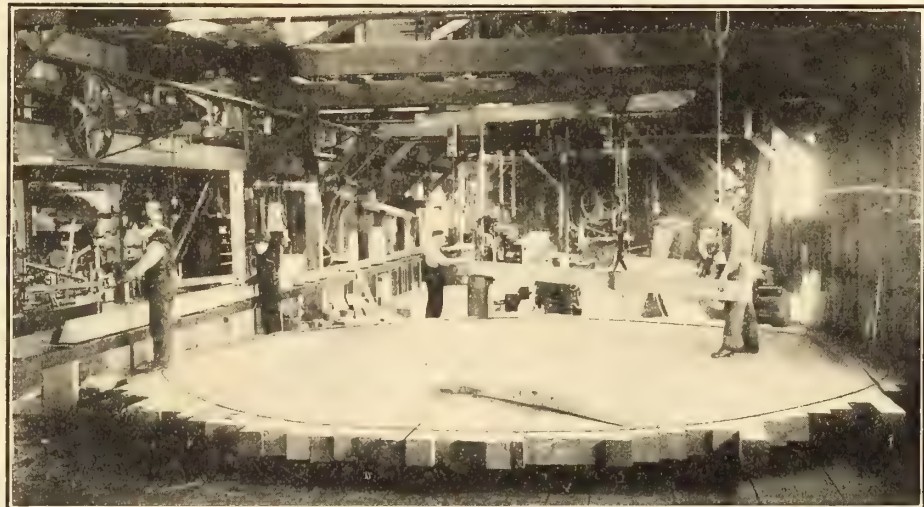
from the dipping vats it is taken to the hydraulic press where a snug fitting coupling is forced on.

The finished pipe is now picked up by the electric travelling crane and is ready to be loaded on the truck or car. The company claim that they are able to deliver their product to the carrier in better shape and with less handling than any other manufacturer of the same class of goods in Canada. The sizes manufactured run from 1 in. up, continuous stave pipes having been supplied as large as 144 in. in diameter.

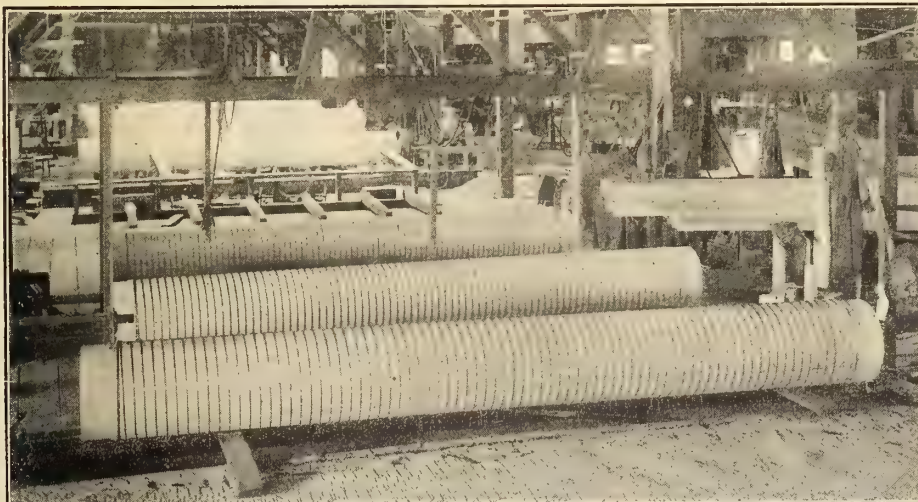
Perhaps a few words as to the advantages of wooden pipe would not be amiss. Owing to the smoothness of the interior surface the carrying capacity is 15 to 20 per cent in excess of that of either steel or cast iron of equal size, is not effected by any of the acids or chemicals that are usually met with in water and is almost free from the electrolytic action which causes so much damage to metal pipes. As wood is a poor conductor of heat or cold the pipe is not so likely to freeze but should it freeze solidly the elasticity of the wood and the wire binding neutralize the expan-



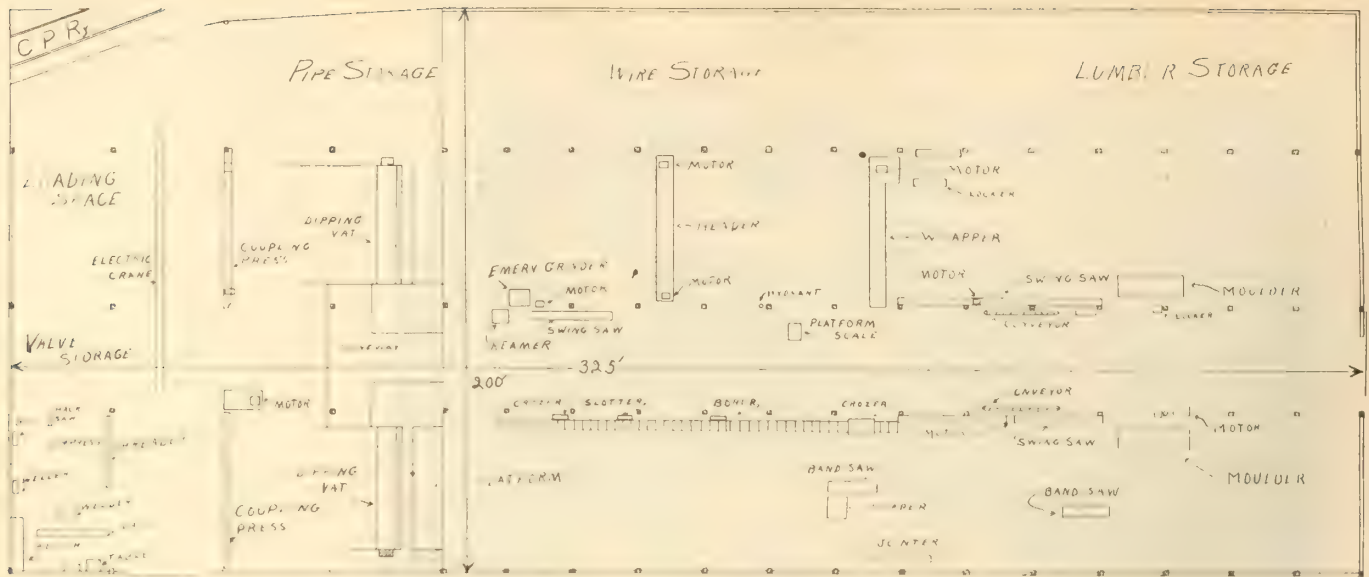
=====
Banding machine winding
wire on pipes
=====



=====
Laying floor of large tank.
Note crane handling stock.
=====



=====
Dipping vat where the pipes
receive a coating of asphalt
=====



Layout of plant, Canadian Pipe Company, Limited, Vancouver, B.C.

sion of the ice and no permanent damage results. The cost is another point in favor of this material as wooden pine costs less and is cheaper to lay than an iron or steel pipe of similar size.

Similar methods are employed in the making of large tanks, reservoirs, etc. In an endeavor to keep up with the demand for these tanks they are forced to devote a considerable part of their plant to this line of work. For the tanks with a capacity up to 10,000 gallons two-inch stock is used while for the larger sizes up to 100,000 gallons the material is three inch.

In the continuous stave construction the joints are staggered and the ends of the staves are slotted to receive a metal tongue. Instead of being bound with wire soft round steel bands with either cold rolled or machine cut threads are used. These bands can be spaced to suit the pressure carried. A tight rigid shell is the result. This construction can be used for pipe of any size and of any length.

Sometimes when the pipe is required for service in tide flats or in alkali ground it is given an additional coating of burlap. The following method is used in applying it. After the pipe has been dipped in the ordinary manner a special machine spirally winds on one or more thickness of burlap, dipping each thickness by passing it through the heated asphalt in the process of wrapping. The pipe is then rolled in saw dust or fine sand and a protecting coat or armor equal to concrete is formed. This renders the pipe impervious to water.

Silos is another line for which a growing demand is being experienced. Farmers are beginning to realize that the silo not only saves labor in the handling of feed material but that it is an important item in the equipment of a modern farm. These are built of continuous stave construction in conjunction with air tight doors and practically air tight roofs.

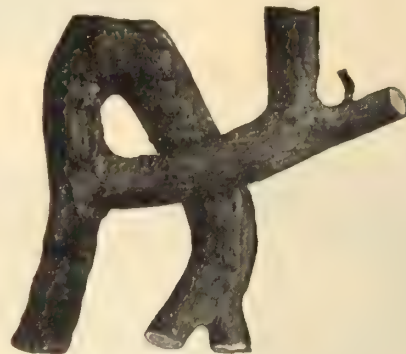
Wooden pipe is also used as a casing for steam lines. Owing to its non conducting properties the pipe effectually prevents the loss of energy through the radiation of heat from the steam and hot water pipes. As economy and efficiency are the aim of all modern industries, there should be a growing demand for this material from those using steam for heat or power.

Don't say, "I've bought War Savings Stamps," say "I'm buying another today."

Unique Tree Growth

While Mr. Ford Casteel, a young Kentucky Lumberman, was cutting wood with his Atkins saw on a lumber tract near the little town of East Berstadt, in the Cumberland Mountains, he found this letter "A" perfectly formed, growing in the topmost branches of a white oak tree. He decided that the company whose name was on his saw should know that their trademark was growing there in the trees of Kentucky, and after climbing the tree he neatly sawed off the emblem and sent it direct to the some office in Indianapolis.

So even the trees are advertising Atkins saws. In spite of the fact that it was inevitably doomed to make the "supreme sacrifice," this tree had become so convinced of the superior quality of Atkins saws that it



Tree growth making Atkins trade mark

just couldn't help twisting its twigs into the shape of the Atkins trade-mark—AAA—which represents the universal truth—"Atkins Always Ahead." You can see the first "A" entirely grown. Now, turn the page upside down and the second "A" appears nearly finished, while the fork on the leg shows where the good tree had already started to get the third "A" out of its system—or should we say "into its system?" Certainly Shakespeare is well exemplified here, for verily we find "Sermons in Trees" and "Good in Everything," especially in Atkins saws whispered the wind as it blew through the branches.

Trade News of the Box Industry

Maritime Box Men Organize

At a meeting of the Wooden Box and Box Shook Manufacturers of the Maritime Province recently held at Amherst a section representing that industry was formed to be affiliated with the Canadian Manufacturers' Association, Maritime Branch.

The following officers were elected: Chairman—Alex. Wilson, Wilson Box Co., Ltd., St. John; vice-chairman—W. H. Farnham, Canadian Woodworking Co., Yarmouth; directors—J. L. Haley, Haley & Son,



Alex. Wilson, St. John, N.B.
Chairman of Maritime Association of
Wooden Box Manufacturers

St. Stephen; J. H. Irving, J. D. Irving, Ltd., Buc-touche; D. W. Murray, Hantsport Fruit Basket Co., Hantsport; secretary—H. R. Thompson, Amherst, N. S.

Matters of interest were discussed, such as standardization of cost keeping, providing positions for returned soldiers, export trade and other subjects of like nature. Under the chairmanship of Alex. Wilson, who is regarded by the trade as a live wire in the box business, they hope to make arrangements whereby the Maritime Provinces will get their proper share of export trade, thus stimulating manufacturing and giving employment to a larger number of men.

Well Equipped Box Factory in B. C.

The Pacific Box Company, Limited, Vancouver, operate one of the most complete and up-to-date box factories in British Columbia. They have an almost ideal location, being within five-eighths of a mile of the centre of Vancouver, with C. P. R. trackage and rail connections to all lines on one side and water frontage on the other.

The present owners acquired this concern in 1910. Since then the business has grown and expanded with rapid strides. In 1913 they erected and equipped their

present plant. Illustrating the expansion experienced by this firm, in 1910 they employed eleven men, and carried a stock of 200,000 feet of lumber; to-day there are one hundred and forty men on the pay roll, and the average stock carried is 6,000,000 feet.

The plant includes two large fast feed Woods planers, two smaller planers, two fast feed seven inch band resaws (one vertical, one an automatic horizontal), seven cut-off saws of the most improved action, two box board printers, dove-tailing machines, nailers, tying machine, and a number of smaller tools. Electric power is used throughout.

In 1918 they added a pail factory, the only one of its kind in four Western provinces. This plant has an output of 1,000 pails per day, and provision has been made for increasing the capacity, as the demand requires. Owing to the long haul from Eastern Canada, most of the pail requirements for British Columbia have formerly been supplied by the factories in the State of Washington.

A sawmill with a capacity of 60,000 feet per day has just been completed at a cost of \$75,000. The entire cut will be required by the box and pail plants. In connection with the mill there are three modern dry kilns, one for staves and two for lumber. Having water frontage facilitates the handling of the logs and, as Vancouver is one of the largest log markets on the Pacific Coast, the mill is assured of a constant supply of timber.

Mr. R. W. Sharpe, managing director of the company, states that in the cities of Vancouver, Victoria, and New Westminster, there are approximately fifteen box factories, six of these being plants of large capacity. There is not enough local business to keep these factories going steadily, but when the freight rates return to normal some of the larger plants hope to develop a good export business. He further adds that they are again resuming shipments to Britain which, they hope, will continue and increase. There never was a brighter prospect for export trade than at present. They are receiving many enquiries for box lumber, but until freight rates are reduced little business can be expected and then, as it will be in competition with the whole world, it will only be secured on a very close margin of profit.

Web Handles For Boxes

In export shipment, boxes loaded with 200 to 300 lbs. are most easily manipulated when provided with handles. Usually such box handles are made of rope, inserted through holes in the ends of the box and secured with wall knots, or inserted in grooves on the under sides of the cleats on the ends of the box, and held in place by nails or screws driven through the cleats.

The former method of fastening has the disadvantage of taking up valuable space in the interior of the box. The latter increases the thickness of the cleats to provide for a groove of sufficient depth to hold the rope, thereby increasing the displacement of the box. Since the rates for export shipments are virtually based upon the cubical contents of the package, the displacement is an important factor.

A box handle made of webbing instead of rope has

been suggested by the Forest Products laboratory as a means of conserving space. For this purpose webbing about 1/8-in. thick and 1 1/8-in. wide, which has a breaking strength of 800 lbs., should prove suitable. It may be inserted through saw-cuts made parallel to the grain in the ends of the box, turned down flat inside, and nailed securely with large headed roofing nails.

Such a handle takes up no extra space either inside or outside of the box. It is easily made and has a lifting strength with a large margin of safety.—Pack-ages.

New Box Making Plant Starts Operations

The plant of Lumber Products, Ltd., situated on the south bank of the north arm of the Fraser River, about two miles west of New Westminster, started operations in January. The plant was designed by the managing director of the company, J. Selby-Hele, and was constructed under his personal supervision. Noticeable features are the elimination of much unnecessary handling and the system by which the shooks are produced in a straight run from log to car.

The capacity of the plant is about 100,000 feet a day, and it is therefore, one of the largest such concerns north of San Francisco. The 1,800 feet of booming ground, capable of storing between three and four million feet of logs, is exceptionally well placed, being sheltered from the least effect of the current by an elbow jutting into the river about a mile upstream. From the tail of the sawmill the lumber is loaded upon the kiln trucks, on which it is conveyed, by means of convenient transfer facilities, to the dry kiln, which, by the way, is a Grand Rapids Vapor Dry Kiln—the first Mr. Selby-Hele thinks, to be installed in British Columbia. Arrangements are being made whereby loaded trucks can be lowered or raised to convenient working heights for the planers.

A spur of the B. C. Electric Railway system runs midway through the plant, making it an easy matter to ship the finished product or to take in supplies or equipment. The railway company is also arranging to operate a passenger service direct to the mill, for the convenience of employees.

The smoke stack 68 ft. 6 in. high, is unique in British Columbia. It is constructed of concrete blocks, which were made on the spot, and is lined inside with firebrick. The air passages in the blocks keep the outer structure perfectly cool.

Altogether, Mr. Selby-Hele and his company are to be congratulated on their plant. It is exceptionally well laid out along lines tending towards a maximum of efficiency and the strictest economy in operation. And the location, on almost level land, with plenty of room for future expansion, is not the least of its advantages.

Box Boards for Export

The Commercial Intelligence Branch of the Department of Trade and Commerce has received an inquiry for box boards from a large British firm. If any Canadian manufacturers would supply these requirements satisfactorily, other business would likely come their way. The following specifications will indicate a very considerable part of the normal requirements of this firm. They have been in the habit of purchasing certain box parts which enable them to make up cases of varying sizes. These parts are cut to accurate dimensions and are smooth sawn, and are formed

as a rule of two pieces, tongued, grooved and smooth on one side so as to take a good impression when put through the two-colour printing machine. The sizes are as follows:

Inches.		
23 1/4	x 13 1/2	x 5/16
23 1/4	x 12	x 5/16
21 7/8	x 13 1/2	x 5/16
21 7/8	x 12	x 5/16
19 5/8	x 8	x 5/16
17	x 8 1/4	x 5/16

All these sizes would need to be securely done up with wire in bundles of 25 parts.

In addition they purchase a fair quantity of boards cut to certain lengths but varying as regards widths. The width would be from 4 inches upwards in steps of 1/2 inch. The sizes would be:

Inches.		
21 7/8	x 5/16	
17	x 5/16	
13	x 5/8	
15	x 5/8	

Any firm wishing to supply these requirements should communicate with the Commercial Intelligence Branch of the Department of Trade and Commerce.

The Lumber Required for Boxes

A true estimate of the box industry is rarely formed. A bulletin issued by the U. S. Forest Service states that box makers annually use more than four and a half billion feet of lumber. Softwood comprises about 69 per cent of this amount and the remaining 31 per cent is hardwood.

The box industry, which includes manufacturers of packing boxes, shooks, fruit and vegetable boxes and baskets, is the second largest wood consuming industry, using in 1912 11.6 per cent of all the lumber produced.

Complete History of the World War

J. A. Fay & Egan Co. have just issued a 36 page book containing a complete history of the world war from June 28th, 1914, to February 1st, 1919, with maps illustrating the various battle fronts. It contains a chronological history of the war as well as detailed accounts of the important political and military events during this period. These books are expensive and the supply for distribution is limited to those who make request on their business stationery. Address J. A. Fay & Egan Co., 153-173 W. Front St., Cincinnati, Ohio.

A new industry is to be started in Australia by the Department of Repatriation for the employment of partially incapacitated soldiers. It has been decided to accept an offer of the patent rights for Australia and two complete units of plant of the Lloyd Reed loom weaving process. This system provides for the substitution of an artificial fibre made from paper in the place of wicker and cane now employed in the manufacture of chairs, perambulators, verandah blinds, and similar articles, the weaving being done by machinery instead of, as at present, by hand.

An accident—the dictionary says an accident is undesirable or unfortunate happening. The operations of chance—don't take a chance, unless you want an accident.

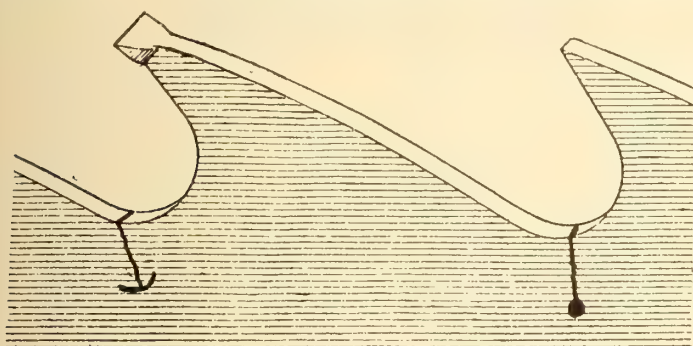
Sparks and Filings in the Saw Room—No. 2

Care of Band Saws—Cause and Elimination of Cracks— Is a Crowned Back Necessary?

By Edgar Usher

About the most common complaint heard in regard to band saws and perhaps the subject most discussed among saw filers is "cracks." Cracks occur in three places and are respectively known as "centre cracks," "cracks on the back," and "gullet cracks," the last named being the most frequently met with. We will deal with them in the rotation named.

Centre cracks are not often met with and experience has proven them to be caused primarily as a result of carelessness on the part of the filer. Sometimes, however, they are a result of an accident as a sliver causing the saw to heat in the centre as the result of friction. But most frequently a centre crack is caused



Method of preventing cracks extending

by insufficient care being given to the tension. A saw that is unevenly tensioned and left with fast spots, will sooner or later develop a centre crack at these spots. Probably before the saw is changed at the end of its run, these cracks will grow to considerable length, this depending entirely upon the size of the fast spots.

Keep the Tension Even

If a band saw is run without sufficient tension, after the wheels have been strained to their proper limit, to allow for a greater strain being carried on the tooth edge than on the back, and to run comparatively free of the surface of the wheel in the centre of the plate, the saw will not only snake in the cut and produce bad lumber, imperil the moral being of the man who eventually puts the lumber through the planer, but also reduces the value of the mill's product. If, however, the tension is properly adjusted to allow the two edges to carry the strain and thereby hold the saw firmly on the wheels, centre crack will be practically eliminated, except, of course, where they occur through accidents.

When a crack of this kind does appear, it is usually small. There is no necessity for immediate brazing. By carefully locating the extreme ends of the crack and with a sharp centre punch, punching at each end and on both sides a hole sufficiently heavy to hold the crack but not heavy enough to injure the steel, the saw will be in good shape to continue its work. The principle thus adopted is to form a circle around the ends of the crack by use of the centre punch, thus distributing the strain over a greater part of the plate.

Another cause of centre cracks which might be mentioned here is a crown on the wheels resulting from lack of foresight in fitting up the mill. A crown

on the wheel has, of course, the same effect on the saw as a lack of sufficient tension, and the same result is the consequence. The crown on the wheel, though, is liable to become worse from continued wear. This defect is even more dangerous than uneven tension since it cannot be as readily remedied.

Still another cause of centre cracks is gum adhering to the wheels when cutting lumber of a gummy nature. This can be overcome by the application of coal oil to the wheels. This is done by attaching an ordinary fibre brush in such a manner that the wheels run lightly against it as they revolve and keeping the brush continually supplied with oil. This is usually an emergency case and the trouble is generally of short duration.

Cracks on the back of a saw are caused principally from much the same conditions as gullet cracks and the same rules of elimination and remedy can be applied. Uneven tension causing "tight" places will almost inevitably lead to cracks of this nature, and too much emphasis cannot be placed upon the importance of keeping the tension at all times as even as possible. Most saw filers carry what is known as a "crown" on the back of their saws. This crown is represented by the back of the saw being longer than the tooth edge, usually about one sixty-fourth of an inch drop in five feet from the straight edge being carried. The writer is of the opinion that the less crown the better. All that is necessary is sufficient crown to offset the drawing out of the front edge as a result of grinding and swaging. Many successful operators of band saws, however, do not use any crown at all.

Case Hardening Causes Cracks

Gullet cracks are caused by a variety of conditions, perhaps the most common being case hardening of the gullets by an improper emery wheel—that is to say, an emery wheel of too fine a grain or too hard a substance, causing friction instead of cutting. This trouble is also caused by the emery wheel becoming choked with steel and gum corrosion, thereby also setting up friction. The free use of the emery wheel dresser is commendable as a means of lessening this form of trouble. Too great an amount of tension is another cause common enough in band saws, and care should be taken to ascertain just what amount of tension is required by the nature of the sawing to be done.

Too heavy use of the hammer is another cause of cracks, which may, however, occur in any part of the plate. Care must therefore be taken when using the hammer for levelling purposes not to strike the plate too heavily as this causes crystallization of the steel, and cracks will probably result. The hammer, depending, of course, upon the gauge of the saw, should not be too heavy, and should be so ground that the face is well rounded so that a well-shaped oval mark is left when striking the surface of an oiled saw. Sharp hammers cut the steel and leave sharp corners that may result in cracks.

One of the most common causes of gullet cracks comes from the gullets being filed with sharp corners. This fault applies more particularly to band resaws in

factories where the saws are often filed by hand instead of being ground on an automatic grinder. This cause will be dealt with at greater length in a later issue. It may be well to mention here, however, that a practice commendable to all band saw filers is to go over the gullets with a coarse-cut round file after the saw comes off the grinder. This will, in any event, insure the elimination of case hardened gullets.

The gullets must be kept with amply sufficient throat room so that there will be plenty of space for the sawdust cut by each gullet's respective tooth. Otherwise the sawdust will pack hard into the gullet and before the tooth gets through the cut, the dust will be crowded out of the gullet to either side. Friction is thus set up and cracks are again the result. Also in this connection the tooth must be given a sufficient

amount of hook to give a chisel like cut in place of a straight faced tooth, which causes the face to pound its way through instead of cutting clean. This means not only cracked gullets, but loss of power and undue wear on the saw.

Do not be too ready to put the responsibility for cracked saws upon the poor quality of the saw, for it is only reasonable to suppose that if the steel is of a sufficiently good quality to stand the compression of swaging without fracturing, this, in itself, is sufficient evidence to a reasonable mind that the steel is adequate to sustain the ordinary strain of its normal work with a margin of safety. Remember too that a saw manufacturer often replaces saws as a matter of good policy rather than chance losing a good customer.

Efficient Operation of the Dry Kiln

Moisture Content of Air Important—Proper Storage of Dried Lumber—
Thick and Thin Stock in Separate Compartments

By A. S.

Considerable study has been devoted to the drying of lumber of late years, so that to-day kiln drying has been reduced to an exact science. The knowledge gained has proved of great benefit to the furniture manufacturer.

Too much attention cannot be given to the process of drying lumber as the lasting quality of the product depends primarily on the moisture content of the lumber that goes to make it up. There should not be any room for guess work. All stock should be thoroughly tested before being removed from the kiln. A standard of moisture content and shrinkage should be set and rigidly adhered to.

Give Stock a Chance to Set.

It is a mistake to take lumber right out of the kiln and commence working it up. It should be left on the cars about twenty-four hours before being disturbed. This not only allows the lumber to cool off, but gives the grain of the wood a chance to set. When it is necessary to store the dry lumber for a time a proper shed or room should be provided and the stock should be kept warm and free from moisture. In storing dried stock it should never be piled in a stack or dead pile while it is warm or in a hot condition, but should stay on the kiln car until it has cooled thoroughly. Another point is that lumber that is to be stored should be dried to a lower point than stock that is going to be worked up immediately. The reason for this is that stock in storage, even under the best of conditions, is bound to absorb more or less moisture from the surrounding air. The drying to a lower degree of moisture content counteracts this to a certain extent.

Different manufacturers have different methods of drying and testing but the results achieved are practically the same. A moisture content of from four to five per cent gives very satisfactory results. Lumber that is too dry presents just as many problems as stock that is not dry enough.

When Open Joints Occur

Open joints are the bane of the life of the average furniture manufacturer. This trouble often occurring as the article is about finished or even after being ready to ship or shipped. The producer immediately thinks that the stock was not thoroughly dry when removed

from the kiln and blames the man in charge of the drying.

When a truck load of lumber is taken from the kiln and tested and found to contain four per cent of moisture it is dry enough to be made up and if properly handled when going through the factory no trouble will be experienced. On the other hand if the stock is stored in a room where the atmosphere contains from six to nine per cent humidity the lumber will absorb a considerable quantity of this moisture. The humidity of the air in the machine, cabinet and finishing room will probably vary the same amount. I claim that it is the difference in humidity of the air after it leaves the kiln that causes the loose joints.

Steaming the Lumber

When air dried lumber is first placed in a kiln it should be steamed for about forty eight hours. This steaming softens the wood and allows the internal moisture to escape. It is a serious mistake to use too high a temperature on fresh lumber. High temperature in the early part of the drying process causes the stock to case harden and honey-comb.

In drying freshly cut lumber, after steaming, the air should contain 30-40 per cent humidity and have a temperature of 160-165 with plenty of circulation in the kiln. Without good circulation the wood cannot be dried properly.

The process should be varied according to the thickness of the stock to be dried. Never attempt to dry thick and thin stock in the same compartment. The thicker stock should all be kept together and dried separately. For thick stock the steam should be kept on for ninety-six hours. The humidity should be held for a longer period and the temperature should not be raised as quickly as the case when drying thinner stock. It is a good plan to raise the temperature every twenty-four hours until the maximum temperature is attained.

Owing to the far reaching benefits derived from properly dried lumber one is amply repaid for all the time and attention given to this important end of the woodworking business.

Unless the emery wheel is run at the correct speed, it will burn or glaze the steel.



F. M. Beatty, Saskatoon, Sask.

Woodworker Elected Manufacturers' Chairman

F. M. Beatty, manager of the Saskatoon plant of Cushing Bros., Ltd., has been elected chairman of the Saskatoon section of the Prairie Provinces Branch of the Canadian Manufacturers' Association.

Mr. Beatty was born in Pembroke, Ont., thirty-three years ago and has followed the woodworking business ever since he left school. He was employed by the Buckingham Planing Mills, Buckingham, P. Q., for a number of years and the experience gained while there has been of considerable value to him.

In 1906 Mr. Beatty heard the call and went West and joined the staff of Cushing Bros., Ltd., Edmonton. While there he held various positions and in 1910 was

appointed manager of the Edmonton plant. In the spring of 1911 when the firm decided to erect a plant at Saskatoon he was appointed manager of the new branch and left immediately to oversee the erection of the building and the installing of equipment.

Mr. Beatty has always been deeply interested in his work and he lays the success that has rewarded his efforts to this fact. The Saskatoon section is fortunate in having a man of Mr. Beatty's calibre at its head.

There must be new methods and new relationship between employer and employee. The life of the worker must be made more comfortable and his outlook more encouraging if his efficiency is to be cultivated and increased and if we are to have a shortage of labor—as every prospect indicates—in the near future, there must be greater productive capacity on the part of the worker if business is to succeed. In order to bring about this spirit, old ideas must be discarded by workers and employers, and one means advocated is the better housing of employees and an opportunity for them to own their own homes, which would prevent drifting from place to place.

Changes in Western Woodworking Industry

Changes have recently taken place in the organization of John Piggott & Sons of Chatham and Windsor. The sons have bought the interests of the father, who is retiring, the consideration in the deal being over half a million dollars.

Percy G. Piggott becomes proprietor of the Chatham branch of the business and will conduct it under the name of P. G. Piggott Lumber Co., his brother Walter T. Piggott, taking over the Windsor business and continuing it as W. T. Piggott Lumber Company.

Both concerns will have fully equipped planing mills, including dry kilns, and handle everything that would be required for the finest mansion or the smallest house. The shipping facilities include a wharf at Chatham and water frontage at Windsor.



Walter T. Piggott, Windsor, Ont.



Percy G. Piggott, Chatham, Ont.

Baxter D. Whitney & Son Incorporated

Baxter D. Whitney & Son, Winchendon, Mass., the well-known woodworking machinery manufacturers, have been incorporated as Baxter D. Whitney & Son, Inc., under the laws of Massachusetts, with a capital stock of \$1,250,000.00. As William M. Whitney, son of the late Baxter D. Whitney, is president of the corporation, Marcus L. Foster, treasurer and Frank C. Smith, Jr., clerk, the business will be continued under the same management that has made the Whitney machines so popular among the woodworking industry in the past.

Baxter D. Whitney & Son have for many years specialized in the manufacture of single and double planers, double spindle shapers, wood scraping machines, back knife lathes and barrel stave sawing machines. On account of the demand for iron working tools during the war, several types of these machines were made by them for the large machine tool manufacturers.

Baxter D. Whitney started the manufacture of machinery in 1837 and for over sixty years the business was carried on by Mr. Whitney. In 1900 his son, William M. Whitney, was admitted to the firm and since that date, it has been under his management.

Broom Handle Manufacturers Organize

American hardwood broom handle manufacturers have organized under the name Broom Handle Manufacturers' Association. The creed is as follows. Object: The protection and advancement of the broom handle manufacturing industry.. (a) To inculcate just and equitable principles of trade. (b) To establish and maintain uniformity of commercial usages by rules and regulations. (c) To acquire, preserve and assemble business information. (d) For other purposes conducive to the interests of its members.

Dowel Prices Advance in the U.S.

Justifying the general advance of about ten per cent in price of dowels that went into effect on Feb. 1st a leading manufacturer states that never in the history of the lumber business has the cost of lumber operations compared with the cost of such operations this winter. This has also been true of labor costs at the mills.

The nearest jobber to our mills is now logging and delivering on cars from a distance ranging from a few hundred feet to a mile from the siding, hardwood at a logging price of \$25.00 per M. feet. This does not include stumpage or car freight. A fair price for this work three years ago would have been \$8 or \$9 per M. feet.

New All-British Piano

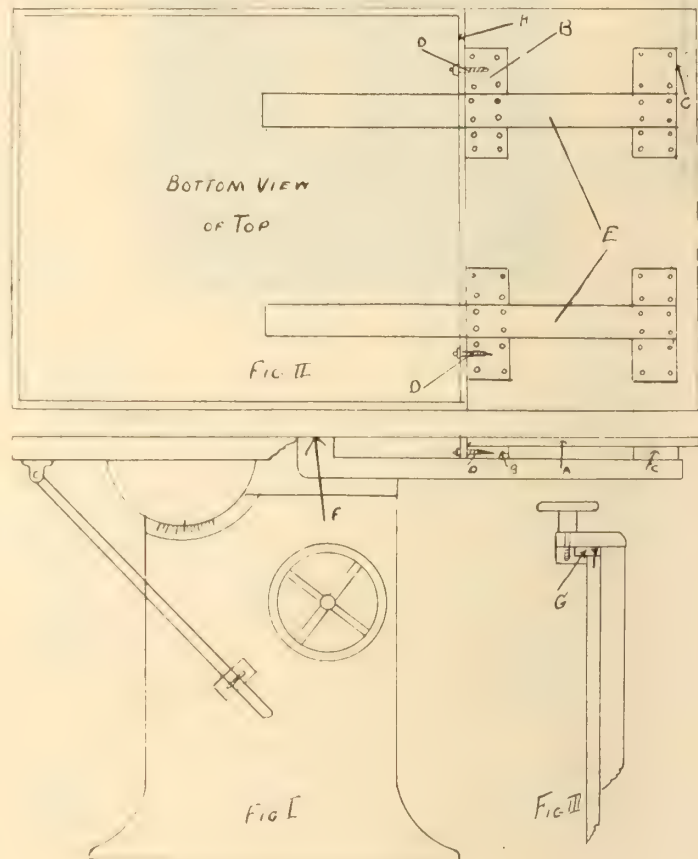
The British piano-making industry has become self-contained during the war. In 1914 the British pianoforte trade was fast coming under the control of the German monopoly, which was prepared to restrict output and force up prices.

British manufacturers and workmen are now independent of the German ring, and Dr. Reginald Clay, the eminent scientist, is endeavoring to perfect the tone and the touch of the British instrument.

The future prospect of the British piano industry for a good share of the world's trade is brighter than at any time in its history.

Extending a Saw Table Top

Sometime ago we installed a variety saw to do our mitering, finished ripping and other light work. The iron top was only large enough to rip stock 22 in. wide. As we have stock as wide as 36 in. in size, we found that it would be necessary to extend the table in order to work wide material. As the saw table tilts as well as raises and lowers, we could not build up with posts from the floor. The accompanying sketch will show how we did it. First we got out the top A, figure 1. This was 13/16ths of an inch thick. Then the four



Method of extending saw table top

blocks D and C, figure 1 and 2, of sufficient thickness to come flush with the flange H when screwed on the under side of the iron top. Next we drilled two holes through the flange H for the hanger bolts D, which screw into the blocks E. When the nuts of the hanger bolts are tightened up the two tops are brought together. To make this extended top perfectly rigid, we put two leverage bars E under the iron table. These bars are screwed to the blocks B and C and extend along under the iron top. The projection F comes up under the main bed of the table. When a load is placed on the extended top, the leverage is thrown on F, and with this additional support, the tops are always kept in line. Figure 3 shows the end view of the front edge of the table. The hardwood piece G is fastened to the rear of the table to give a continuation of the slide for the fence. We found this table worked very satisfactorily, and as it is easily detached, when not required, it can be taken off and hung up out of the way.

In 1917 Cuba imported lumber and manufactured wood products to the value of \$5,439,000 of which \$176,045 was from Canada. During the same year the wood exports were valued at \$1,444,165.

Upholstering and Trimming

Making an Upholstered Chair

By C. H. P.

In the making of an upholstered chair the first thing is to secure a properly constructed frame of the desired dimensions. Good sound lumber must be used throughout. The frame has considerable strain on it when upholstered and unless strongly made will have a tendency to warp or break.

When the frame is webbed, instead of using a slat bottom, the webbing should be not more than one quarter of an inch apart and should be fastened securely with plenty of fourteen ounce tack—should the wood be very hard care must be taken not to use too many tacks or the wood will split.

Tie Twine When Sewing Springs

The springs should be sewn securely to the webbing, using at least three or four stitches to each



A new design. The Farquharson-Gifford Co., Limited, Stratford, Ont.

spring. Make sure that every loop of the coil is tied securely so that there will be no possibility of the twine slackening, thus allowing the springs to be tied crooked. When tying down each spring must be cross-tied and should be tested to make sure that they are neither too hard or too soft. It does not pay to skimp the number of springs used for if sufficient springs are not used the seat will be sure to sag.

The edge wire should have sufficient temper to give the springs the proper amount of support.

If a drill or heavy duck is used to cover the springs it should be well back tacked, in fact, there is no objection to too many tacks being used. Sew the covering well to the springs so as to prevent the knots in the tying twine wearing through.

The first stuffing is then put on and should be covered with a good grade of hessian. Hand sew to drill using stitches not more than four inches apart.

Stitch the Edge Well

The edge should be well stuffed and sewn securely to the wire. To make an edge that will stand up it should have two or three rows of stitches all around.

The second filling is next put on in a nice even layer and to avoid shifting it must be sewed to the hessian of the first covering. The top layer is always hand picked to avoid lumps and is well interwoven to fill up all holes or soft spots. Enough cotton wadding to prevent the filling material working through should be placed on top. It can be readily seen that it would not be very satisfactory if the hair or other material were to work through the finished piece.

The upholsterer when putting on the cover, should see that it is perfectly centered and that it looks well from every angle. The band must be nicely matched whether it is made plain, ruffled or buttoned. The welt used in sewing the band on must be of the same material as the covering.

The band should not be stuffed too tightly or it will counteract the spring of the edge.

Sometimes when covering the back of a couch the back is divided into three sections and matched with the three separate cushions that may be used on the seat. The main advantage of covering it this way is that the cloth will not become loose and wrinkle as readily as if it were all in one piece.

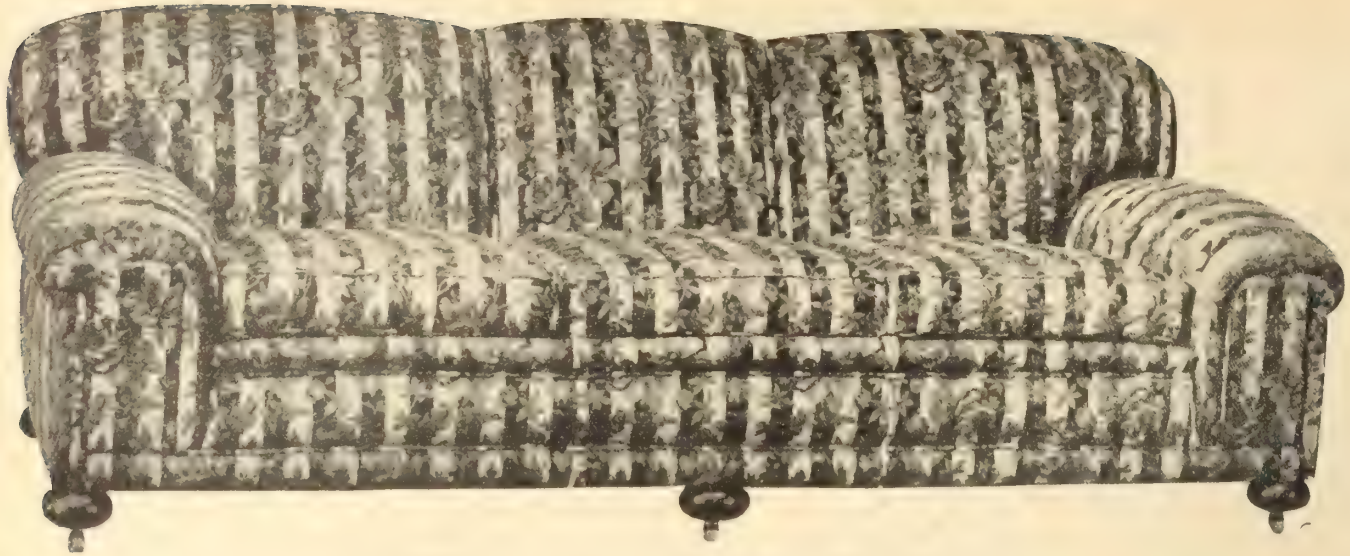
If a gimp is used, pains should be taken to see that it matches properly with the cover. When attaching it every loose thread should be trimmed off or covered with it.

Where Pillow Arm is Required

On some of the newer upholstered pieces a form of upholstering, known as the cushion arm, is used and is made as follows. Four slats are fastened to the bottom of the arm and placed to conform to the required shape. Four light gauge springs are then attached to each slat, this gives the arm the pillow effect. The duck must not be attached too tightly and should be securely sewn to every spring. Put on a thin layer of filling for the first stuffing and do not pull canvas too tight. Sew it well to the duck. Do not stitch the edges too tightly, but have the canvas loose.

Second stuffing to be well sewn down, but not too tightly. Must be well interwoven. A nice layer of cotton wadding is next put on taking care that all the filling is well covered. When tacking down the cotton cover do not stretch too tightly as all the slackness will be pulled down with the top cover. The same material is used for the outside of the arm.

It is as much credit to the upholster as it is to the manufacturer if all work is neatly done.



A Chesterfield Couch. John C. Mundell & Co., Limited, Elora, Ont.

The Use of the Dowel Joint

By Cabinet Maker

To all appearances dowelling seems to be a very simple operation, yet there are a few essential points that must be considered to secure the best results. One would naturally think that the tighter the dowel fitted, provided it did not split the stock, the better it would hold. The reverse holds true, however, the best dowelling practice is to have the dowel just a shade under the size of the hole that is to receive it. Care must be taken not to have it too loose as considerable trouble is often experienced through the use of loose dowels. If the stock on hand is not the right size a dowel plate should be used to secure a proper fit.

How many workmen provide an air vent in the side of the dowel? Very few, I will venture to say. At times the air in the hole will not allow the dowel to be driven home and when this occurs the result is an open joint. It is advisable to provide an outlet at all times.

The pointing of the dowel is another item that is often overlooked. If the dowel is driven with a square end it carries all the glue ahead of it, thus lessening the holding power of the dowel. There is also a tendency for the square end to enlarge the hole by tearing and forcing the wood fibre ahead of it. This occurs more often when driving into end wood. Some go to the other extreme and give their dowels a long tapering point. This is not necessary. A very satisfactory way is to have a plate with a countersunk hole in face of it, placing the end of the dowel in this hole and giving it a slight tap with the hammer will knock the sharp corners off and give good results.

The size of dowel to use is worthy of some thought. Some make a practice of using as large a size as the stock will allow. It is my opinion that within reason the length of the dowel is of more importance than the size of it. Where a doweled joint has given away one seldom finds that the dowels have been broken, it is more likely that they have pulled out of the holes. What does this mean? Simply that the strain is not so much a shearing strain as a pulling one. The longer the dowel the less likely it is to pull out.

Good dowelling means strong joints, the lasting qualities of the work depend largely on the way the material is joined together. A workman who takes a

pride in his work will give the same thorough attention to this simple operation that he will to the parts that are seen and examined.

High Furniture Prices in England

The following table indicates the enormous increase in the prices of furniture in England. The dealers state that they are only making regular profits and that the responsibility for the enhanced values rests on the furniture manufacturers. The manufacturers point out that the heavy increase in lumber and labor costs are responsible for the tremendous advances in quotations. Freight rates from Canada to Great Britain undoubtedly played an important part in the rise, as will be seen when it is stated that before the war the freight rate for soft woods was about 40/- per standard, and during the war it was as high as 600/-, although it is down to 275/-.

Manufacturers' Prices to Dealers

	Pre-war			Today		
	£	s.	d.	£	s.	d.
Walnut sideboard, 4 ft. 4 in. . .	4	12	6	15	10	0
Kitchen table	0	7	6	2	2	0
Wire mattress, full size	0	6	6	2	1	6
Folding trolley car	0	16	0	2	5	0
Bassinet	1	10	0	4	1	6
Combination bedstead, 3 ft.	0	6	6	1	16	6
Oak bedstead, 4 ft.	1	2	0	4	13	0
Kitchen chair	0	2	8	0	9	6
Oak hallstand	1	2	0	4	10	0
Wringing machine, 24 in.	1	12	6	4	13	6
Sitting-room suite in can., repp, or velvet	4	15	0	15	0	0

To buy cheap material, to be satisfied with cheap help, to be content to put out a cheap product, is not the ideal of the Man of Affairs. To be sure, the one who adopts this policy may achieve mediocre success, but in the Pathway of Progress he is sure to find before long a mysterious barrier raised. His neighbor, perhaps who has not made such a rapid get-away at the start, is building solidly for the future and his normal, healthy, merited growth, knows no obstacle!

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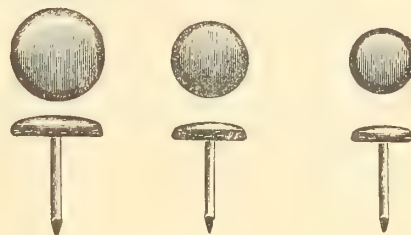
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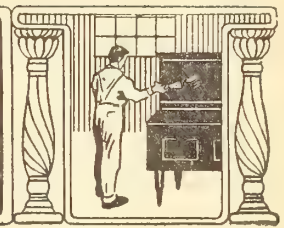
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THE FINISHING ROOM



The Making of Enamels

Different Ingredients and Pigments—Materials Ground and Tested—
Special Enamels for Different Uses

By Dixy Wells

In our last article we gave a few practical points regarding stains and their use in the finishing room, and while this line of material plays an important part, enamels find popular use, and even paints are growing in demand for certain lines of furniture.

A practical knowledge of the component parts and functions of perfect paints will prove very interesting—on the basis that the more you know about a thing the more intelligently you can use it. A thorough understanding of the manufacturing process also enables you to detect faults, to sight the presence of "dope," to understand shortcomings and demand the presence of certain ingredients in your materials, which will do the work you want.

Of course, the first things to consider in the manufacture of enamels are the ingredients in proper proportion and properly mixed, in order to assure certain definite results. The same as certain parts of an automobile have definite duties, and if one shirks or is lacking, your machine is liable to stall or refuse to give the service which you have a right to expect in consideration of the price of purchase.

The base of paints or enamels consists of various pigments, one or more, and with or without inert extenders. We have dealt in a previous article with inert extenders. In the production of paints or enamels the pigments used may all be white, or entire color pigments may be employed, or a certain larger proportion of white used with the addition of various proportions of colored pigments to reach the desired shades.

Ingredients in Different Undercoatings

If for an undercoating, you are using a straight white grinding, which may consist of zinc oxide, paris white and lithopone, or the lithopone may be used alone, and also a portion of white and and lithopone. The sale price is governed almost entirely by the proportion of these ingredients which are employed in the manufacturing process. For certain work single lots of paint or enamel may be used which contain varying proportions of the above materials, that is, the goods need not necessarily be expensive in order to assure desired results. Just as a small house will do for certain families, where for larger families bigger houses are required.

Pigments are ground by water cooled stone mills, the stones being of various sizes, all the way from twelve to thirty inches. When an experimental batch of pigment is to be ground the smaller size mills are employed for the purpose. This is always advisable, for if the formula is to be tested a small batch of material is made up first to insure corrections before larger portions are made up from the production of the twenty and thirty inch mills.

Small mills, say from sixteen to twenty inch, are used in grinding oil colors, enamels and for coach color work. The larger mills, where the thirty inch stones are employed, are usually put to work on heavy bulk goods, such as grinding for house paint, certain grades of railroad work, manufacturing industrial finishes, etc., where great fineness is in no way necessary. In speaking of these mills, as a rule they are composed of two stones, the top one of which is stationary. It is only the bottom one which moves and accomplishes the grinding. The top stone has a cone through which the batch of mixed materials runs and coming in contact with the revolving second stone, undergoes the grinding process.

Roller Type of Grinder

There is another type of grinder known as the roller mills. They also are water cooled and, in some sections are quite extensively used. They, however, do not grind as fine, and have a different effect upon the particles; they really flatten them out instead of crushing or breaking up the particles as do the first type of mill described, but the roller mills confine their work usually to pigments which do not need to be ground finely, like zinc or lithopone. These roller mills are also used for grinding materials for flat enamels.

In speaking of fine enamels for high class furniture work, there are many important requirements, such as fineness, ease of application, proper drying, high gloss, uniform color, etc. Pigments such as zinc oxide are ground in damar varnish and refined linseed oil, and thinned, either a heavy naphtha or turpentine is used to thin to the required consistency. The result of this is the soft white paste which may give a high gloss, but will be very slow in drying.

The large agitator tank now comes in use, we will say a tank that holds fifty gallons. In this tank we put a certain number of pounds of this white paste, to which has been added sufficient thinners and high gloss varnish to make the desired quantity. The foreman, or man in charge, knows when this batch has remained in the agitator tank for a period sufficient to warrant a thorough and uniform mixture.

When this point has been reached a sample is taken out in order that a thorough test may be made, for in all well regulated manufacturing plants, practical tests are carried out in order that the goods may reach the user in a state that will enable them to measure up to full specifications. Tests of this character are the simple ones of seeing how the goods will work out on the job. A small panel is finished and very careful notice is taken of exactly how it flows and levels out, to assure that no brush marks or other imperfections will show in the finished work. Proper

time is allowed for setting and thoroughly drying. Careful attention is given to the hardness of the film, and the lustre produced, elasticity and toughness is also considered, in fact, every possible point is carefully scrutinized in order to assure results. Every test is made to determine the merit points that every foreman finisher would expect.

Special Enamels for Spraying

Many factories to-day are using a spraying machine for certain classes of goods, and the average enamel can be used either with a brush or in the sprayer, therefore, tests are made with a spraying machine, but there are many cases where goods are sold exclusively for the use in the sprayer, and in this case the thinners employed should not be so heavy, a lighter one like benzine is employed, and also the specific gravity of the batch must be considered.

Now when this lot of enamel in the agitator tanks is in a condition to receive the gum it is necessary to use added thinner, and this takes great care, for if proper body and weight are not present the addition of more thinner is liable to destroy proper covering capacity.

When testing the spraying ability of enamel a good size panel is set up with the sprayer gun filled, and the action started, and the ingredients, especially the gum in the batch must be of proper consistency to spray freely from the nozzle.

You will see if the enamel has not been properly thinned or the ingredients properly ground and intermixed, there is going to be an interference in this process. Very careful attention is given to the surface produced by the enamel as sprayed on this testing board. Of course, if too much thinner has been used the covering properties will suffer, and if too much benzine has been put in, it will tend to break up the varnish under the pressure of the blower, and

the finished surface will be coarse and pitted. In some cases small beads will show.

Many a perfectly good enamel batch has been sacrificed by faults through unintelligent thinning. As you know many parts and even finished pieces are now being dipped in some factories, and the same caution in manufacturing and testing must also be exercised. In this case the enamel must be thinner than that used in applying with a brush. You see it must be thinned in order to flow freely and eliminate sagging and streaks, but it also must have good covering and drying properties.

Where a Baking Oven is Used

Then there is the class of goods coming under the head of baking enamels, which are used on metal furniture, metal beds, etc. In this class much of the work is either sprayed or dipped. Many black baking japans are used. These produce a very high lustre, and will stand baking at a very high point, say 450° Fahrenheit.

In some colors such as browns, grays, maroons, greens, etc., special goods are manufactured under the head of baking japans, and some of these will not stand very high heat. You see that this must be taken into consideration in the manufacturing process, in order that certain colors, as shown on the chart from which you buy, may be retained even under the baking process, for unless they are made right and baked according to specific standard the colors are liable to break down, fade, or change entirely from what you might expect from chips shown on color cards and from which you possibly make your selection.

These are but some simple points regarding enamels as used by the average furniture manufacturer, but we are sure they will prove a help to a better understanding of enamels on the part of the foreman finisher.

The Construction of a Fuming Box

Details of Fuming Closet—How Ammonia is Evaporated—Steam as an Aid to Fuming—Shellac and Wax for Finishing

By W. J. Beattie

The fumed finish is still a strong favorite, in fact was never more popular than at present. This method of producing a proper fumed finish has been pretty well perfected during the last five years. The writer offers the following information for the benefit of "A Reader" who requests it.

The description of a fume box, is of one in actual operation, which has been turning out work for some years, having during that time been given some improvements that were suggested by experience. The room, or box is 8 ft. by 10 ft. by 8 ft. high, being about 4 ft. less than the height of the finishing room ceiling. The box consists of a frame work of 2-in. by 4-in. scantlings, covered with heavy canvas or duck, on the outside, the roof being of thin matcher lumber.

A ventilator of galvanized iron, 12 inches in diameter runs up through the factory roof, having a damper, which is closed during the fuming operation, and which when that is done, carries off the fumes before the door is opened. The door is a frame work of canvas, similar in construction to the walls, being the full size of the end of the box, it lifts away bodily, being held in place by a bar that falls into lugs at each end. The

canvas walls and door are well painted on both sides.

The tank that holds the liquid ammonia is placed on the roof of the box, on the side that is found to be most convenient. This tank of galvanized iron, is fitted with a small iron tap which is set to drip the ammonia into an iron pipe that leads into the box through the roof. The ammonia runs into small open metal troughs about 24 inches or 30 inches long, that are nailed in zigzag fashion on to wooden standards on the inside of the wall.

There should be 8 or 9 of these troughs, so inclined that the ammonia will run at a very moderate speed, the drip end of the lower one being over a metal tank of several gallons capacity, which is half filled with water. In the bottom of this tank a small coil of steam pipes is placed, being controlled by a valve outside the wall.

For a fume box of the size given, 5 pints of liquid ammonia will be sufficient. This quantity is run off at a speed of a fast drop, say three drops to a second. At the same time the water in the tank must have been brought to the boiling point, so that a liberal steaming is going on while the ammonia is flowing in. This

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method softens the surface of the wood, opens the pores so that a real fume results.

The steaming must not be carried to excess, or trouble will come. Too safeguard against this, have a single paned window in the side of the box, when the dampness inside has reached the point of "drip" on the pane it will be time to shut off the live steam. Have the steaming operation performed again in 5 or 6 hours after the first "charge." As a fuming box is generally filled and steamed just before quitting time, the second steaming can be done by the night-watchman, who can be instructed in the method.

Just above the water tank, in the side of the box, have a small door. This can be opened when necessary, to see that the water in the tank is sufficiently heated to produce enough steam.

The ventilator can be opened early in the morning, so that the ammonia fumes that remain in the box can be drawn off before opening to remove the goods. A good way to hurry the ventilation, is to connect a small pipe to the air compressor line, open the ventilator turn on the air and the pressure will soon blow the fumes into the open.

Goods to be fumed are stained first, using the fumed stain, as supplied by the manufacturers diluted with an equal quantity of water. After the articles are removed from the box, they are sanded smooth, given a coat of thin shellac wash, sanded, shellaced, shaded where necessary, sanded again and waxed with the regular fuming wax, specially made for the purpose.

The Removal of Varnish Bloom

By L. Campbell

Among the common faults encountered when using varnish that of blooming is probably the most notable. Who has not been bothered by that whitish film or mist which so often appears, sometimes to remain permanently?

This trouble is more often encountered when using a cheap grade of varnish, but occurs even when the best grades are used. The smooth, glossy surface which varnish offers to the air induces the condensation of the moisture contained in the atmosphere and this moisture gathers on this surface. If the varnish has not had time to dry perfectly before this occurs blooming is sure to result.

Again, it is sometimes caused by the water in the varnish. That is moisture that was in the original gum from which the varnish was made and which had not been properly eliminated before the gum was cut. Vapor arising from a damp floor will also cause the appearance of this trouble. Varnish that has been stored for some time, especially in a pail or in a damp place will often show this fault, or will become coarse and gritty.

The best way to avoid blooming is to make sure that the varnish room is dry and well ventilated. A warm, even temperature should be maintained as far as possible. This will hasten the drying of the varnish, and the less prolonged the drying period the less liability there is of bloom appearing.

When the bloom is due to either moisture or frost it may be removed through warmth and by washing with warm water and then rubbing briskly with waste and sweet oil, or sometimes with a mixture of sweet oil and vinegar. It should then be wiped perfectly dry.

If the bloom is due to the condition of the varnish itself it can seldom be completely eradicated without

re-varnishing and in some cases, when the bloom is very bad the varnish has to be cleaned right off and the surface refinished.

Wood Alcohol Produced in Quebec

As shown in a bulletin entitled "Wood-using industries of Quebec," issued by the Forestry Branch, Department of the Interior, there are now eleven destructive distillation plants established in Canada, four of them situated in the province of Quebec. These latter consume about 144 cords of wood per day, or about 45,000 cords (24,930,000 feet board measure) per year. It is estimated that the total consumption for Canada is over 500 cords per day.

The wood used in the province of Quebec in wood distillation are maple, beech and birch, with a small quantity of other hardwoods. The raw material is cut in the form of cordwood and is seasoned for a year or more in order to dry it out.

The products of these crude distillation plants are gases, crude wood alcohol, acetate of lime, cresote oils, hardwood tar and charcoal. The gases and hardwood tar burnt under the retorts; part of the creosote oil is also burnt, while part is sold in the form of oil. A new use has recently been found as some of them have been demonstrated, as a result of the experiments made by the Forests Products Laboratories of the Forestry Branch, in co-operation with the Mines Department, to be suitable for the flotation process of extracting ores, according to the bulletin.

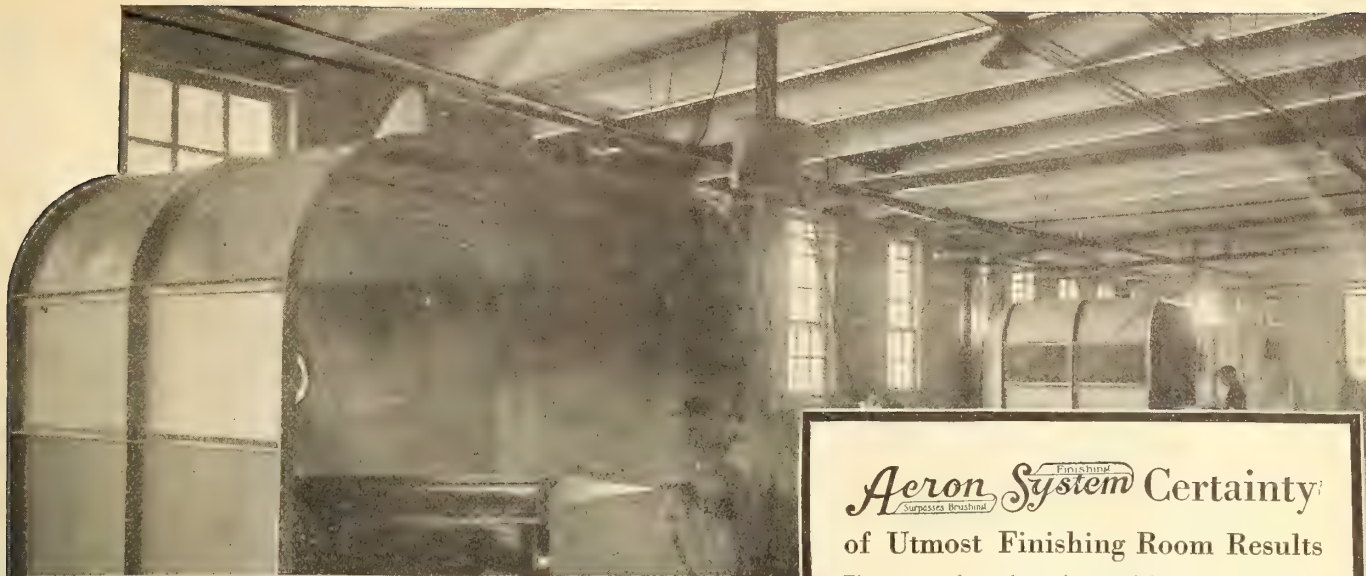
Crude wood alcohol is refined by fractional distillation to produce methyl alcohol and methyl acetone or acetone-alcohol solvent in various grades to suit market conditions. Formaldehyde is also manufactured from the methyl alcohol. Acetate of lime is sometimes exported as such, but usually is converted into acetone as a solvent. The charcoal is sold for domestic fuel. The valuable products are wood alcohol, acetate of lime, acetone, and charcoal, and the oils, as explained in the bulletin.

American Furniture for Export

Reports from below the line indicate that the manufacturers in the different furniture centres are getting together with a determination to go after the export business in a thorough and systematic manner. The Evansville men are opening export offices in both New York and New Orleans and plan on working up a good South American trade. They are preparing catalogs to be mailed south and will follow these up by personal calls from their representatives. This is a purely local scheme but is being followed in other centres.

China is producing a wood oil, which is taken from the nuts of two varieties of trees; while the trees are different the oils by chemical analysis are the same. The United States takes thirty thousand tons annually, seventy-five per cent of China's exports of this commodity. The oil is brought to this country, it is stated, chiefly for the manufacture of varnish, as it possesses the advantage of drying quickly and of making high-class varnish with cheap gums.

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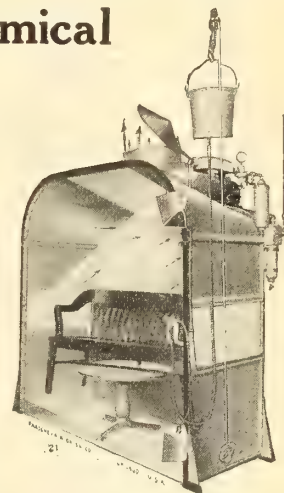
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10 Pcs. Qt. Oak, 1, Side	72 x 24 x 3/8	18 Pcs. Mahogany, 2, Sides	72 x 24 x 3/8
6 Pcs. Qt. Oak, 2, Sides	72 x 24 x 3/8	63 Pcs. Mahogany, 1, Side	72 x 24 x 3/8
50 Pcs. Pl. Oak, 1, Side	60 x 30 x 3/8	8 Pcs. Qt. Oak, 1, Side, & Pl. Oak	
56 Pcs. Pl. Oak, 2, Sides	60 x 30 x 3/8	Back	72 x 24 x 3/8
58 Pcs. Pl. Oak, 1, Side	72 x 24 x 3/8	6 Pcs. Qt. Oak, 1, Side & Pl. Oak	
86 Pcs. Pl. Oak, 2, Sides	72 x 24 x 3/8	Back	60 x 30 x 3/8
22 Pcs. Birch 1, Side	60 x 30 x 3/8	4 Pcs. Walnut, 1, Side	60 x 30 x 3/8

3 ply, $\frac{1}{4}$ " Thick

36 Pcs. Qt. Oak, 1, Side	72 x 24 x 1/4	82 Pcs. Birch 1, Side	72 x 24 x 1/4
50 Pcs. Qt. Oak, 1, Side	60 x 30 x 1/4	50 Pcs. Mahogany, 1 Side	60 x 30 x 1/4
1 Pcs. Qt. Oak, 1, Side	68 x 24 x 1/4	37 Pcs. Mahogany, 1 Side	72 x 24 x 1/4
3 Pcs. Qt. Oak, 1, Side	70 x 24 x 1/4	12 Pcs. Mahogany, 1 Side	70 x 22 x 1/4
3 Pcs. Qt. Oak, 1, Side	60 x 24 x 1/4	8 Pcs. Mahogany, 1 Side	60 x 24 x 1/4
50 Pcs. Pl. Oak, 1, Side	72 x 24 x 1/4	4 Pcs. Mahogany, 1 Side	54 x 24 x 1/4
50 Pcs. Pl. Oak, 1, Side	60 x 30 x 1/4	3 Pcs. Mahogany, 1, Side	72 x 20 x 1/4
1 Pcs. Pl. Oak, 1, Side	70 x 24 x 1/4	1 Pcs. Mahogany, 1, Side	60 x 29 x 1/4
62 Pcs. Birch 1, Side	60 x 30 x 1/4	4 Pcs. Mahogany, 1, Side	72 x 12 x 1/4

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Veneers AND Panels

Cutting and Matching Veneers

By A. E. Wolfe

When preparing to cut and match veneers one should make certain that there is a considerable quantity of a suitable grade of veneer on hand and that there is a good assortment of sizes. This applies more particularly when laying fancy figured and crotch veneers for the better grades of furniture than when the medium and cheaper grades are being turned out. Many manufacturers do not give sufficient attention

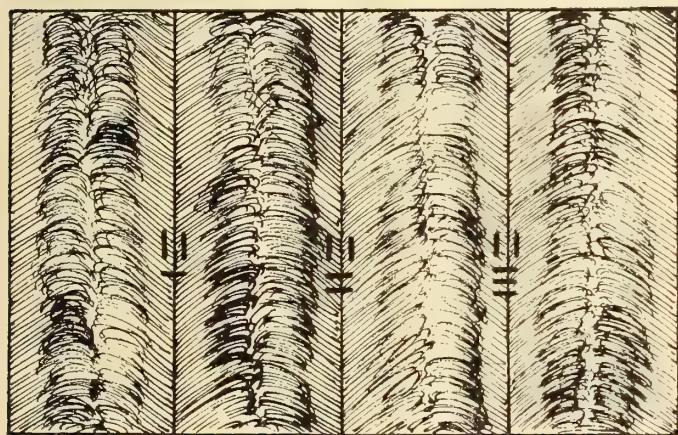


Fig. 1. Method of marking veneers

to the quantities and assortment that they carry in stock. For high class work a stock of crotch veneers well assorted as to length, width and figure is a prime requisite.

Why Large Stocks are Advisable

There are many reasons in favor of the carrying a large quantity of veneers. A considerable saving can be effected, both labor and materials, when one is able to select the size that will cut to the best possible advantage. Better results can be obtained when matching, with the resultant increase in value of the product. Another point that must not be overlooked is that often when a number of suites have been made there will be certain odd pieces sold, resulting in a few broken suites. In the event of it being found necessary to fill up these odd lines the fact that there is a quantity of the same veneer in stock will facilitate the matching of the veneers on the odd pieces with that of the finished suites. Should there be any odd lots of veneers left on hand they can always be worked up on small jobs, samples, etc. When there is not a quantity of the same material on hand it will often be well nigh impossible to secure, when needed, veneer that has the necessary grain and figure.

In many cases where poorly matched veneers are found one cannot help but wonder who was at fault, the workman who laid the stock, or the buyer who neglected to supply a sufficient quantity of suitable ven-

neers. Often the veneer man is blamed when the fault was entirely due to the material provided. It is advisable for the veneer man and the buyer to consult each other and by co-operating to always keep a good supply of suitable veneers on hand.

Keep the Sheets in Rotation

When it comes to the actual cutting and matching of veneers, first pick out stock of the required size and figure, then calculate the number of sheets that will be required for the job that is going through. Take this number from the log or flitch, making sure that every sheet is in its proper place—just as it originally lay in the log. Keeping the sheets together square one edge and end then cut the lot to the required size.

Now to match, when a sheet is reversed a joint matched as shown in the upper part of cut No. 2 will be made. To secure the quarter effect it will be necessary to reverse two more sheets, these when jointed will give a panel like cut No. 2 and 3. Thus to match a quartered panel it is necessary to reverse three sheets.

When matching stock that has been cut to size it will pay to give particular attention to reversing the sheets in succession. In this way a lot of trouble in matching the variations in grain and figure will be avoided and much time will be saved.

Use Marks and Numbers on Face

After the stock has been cut and matched, to avoid confusion and delay, the pieces should be marked and numbered as shown in No. 1 sketch. The numbers and marks should always be put on the face side. They will then serve as guides for the workmen who perform the remaining operations, especially in the veneering department for the gluing of the face veneers on the core. Marking the stock in this manner will be found to be a great help when the figures have been matched right and left.

Sheets that have been properly marked and num-

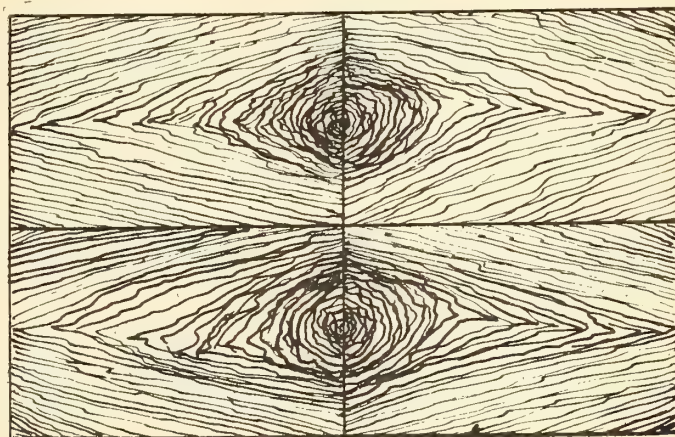


Fig. 2. Working narrow stock

bered will match perfectly when placed according to the marks. This avoids confusion and delay and increases the output of the glue room by simplifying the work.

Veneers that have the grain running vertically should have the joint in the centre of the case or front. If more joints are necessary the stock should be cut so as to have the widths evenly divided up on the face thus veneered. Where there are a number of joints, if material of the proper width is available the joints may readily be made in their proper places and little waste will result.

Veneer Largest Pieces Possible

On flat or straight front cases, considerable time may be saved and a lot of trouble avoided if the core stock is got out the full size of the front to be veneered. If the front is too large to be conveniently handled in one piece it may be worked out in two or more sections. The veneer will then be applied the full size of the different pieces of core stock and the pieces cut to the required sizes after veneering. When this method is followed less trouble will be experienced in matching the stock, less breakage will ensue and the gluing can be done in much less time.

Swell fronts and bandsawn work will be found more difficult to lay out and match and the above method cannot be followed. Where the swell doors are in pairs or where there are a pair of short drawers with a long drawer running the entire width, it is very important to have the face side correctly marked and numbered and the stock must be laid out in such a manner that all the joints will intersect and at the same time matching the figure or grain of the centre joints. Where more joints are necessary they may be laid out after the fashion of cut No. 1.

Narrow Stock Used Advantageously

Narrow stock can be matched for a face surface by following the method outlined in sketch No. 2. Sketch No. 4 shows the same surface when veneered with wider stock. The matching of veneers for small

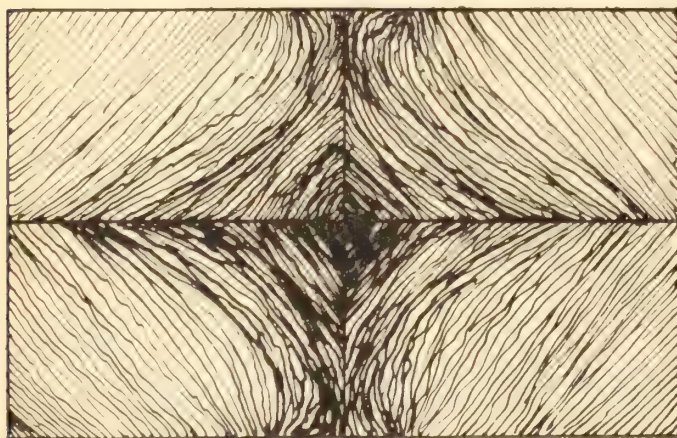


Fig. 3. Panel showing quarter effect

surfaces is an instance of where a good variety of sizes proves to be very advantageous.

Stripe veneers are not so difficult to match. Good results may be obtained by following the same method.

Not all grades of veneers can be used for matching. Many kinds will be found to be shelly or ruptured on one side, this is often noticeable when using sliced quartered oak stock. It can readily be seen that unless both sides of the veneer is in good condition it would be out of the question to use such stock where

it is necessary to reverse any part of it. In using quartered oak veneer, if reversing is unavoidable, the best results are obtained only when sawn veneers are used. The same applies to some crotch veneers. Stock that must be reversed should be carefully selected and all faulty material laid to one side and used for some other part of the work or on another job.

Better work can be turned out where tape is used on all the joints that have been matched for figure and

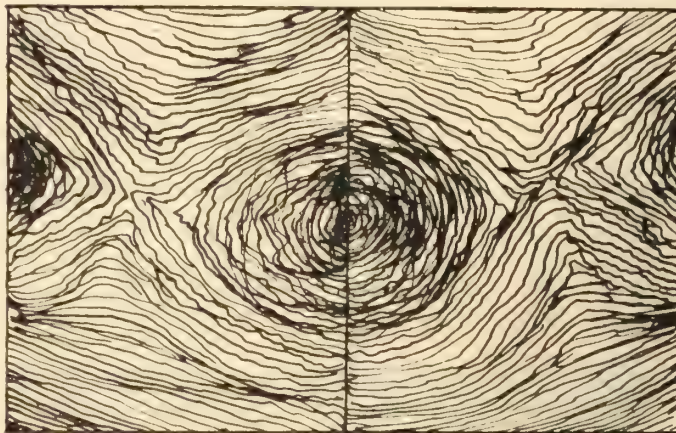


Fig. 4. Matching wide stock

grain. The tape tends to keep the pieces in place as well as making a better joint.

Veneers should be stored in a special room and the humidity of the air closely watched. If the stock is too dry it is so brittle that there is a high percentage of waste due to the breakage that occurs. On the other hand if the material becomes damp it will swell and hair line checks will result. Veneers are expensive and it will pay the manufacturer to give careful attention to the question of proper storage facilities and the elimination of waste and breakage.

Certus Waterproof Glue

A product that owes its present state of development to war activities is waterproof glue. The working out of the aircraft program created a demand for a glue that would withstand heat and moisture for when flying the planes were continuously drenched in water-soaked clouds or perhaps in pouring rain.

The Certus Cold Glue Co., of Detroit, Mich., are manufacturing Certus Cold Glue, a waterproof glue in appearance not unlike cornmeal, which when mixed with cold water makes a glue that possesses adhesiveness and water resisting qualities such as were required for the production of aircraft.

Certus Cold Glue is a casein glue. Recent investigations show that such glues were used by many of the ancient countries and people. Glued objects, of ancient manufacture, when brought to light today show that the glues used possessed remarkable qualities of adhesiveness.

The Certus Cold Glue Co. state that the casein glue used by our forefathers had to be used as soon as possible after it had been made or inside of from ten to twenty minutes and not until the Certus Cold Glue was produced was it found possible to make casein glue in powdered form which when mixed with cold water would keep for some time and would remain in a workable condition for many hours without losing any of its qualities. When properly used it will produce a strong joint even where wet or damp wood, pitch pine or oiled wood is used.

The Need of Efficiency in Veneering

**Greater Satisfaction from Properly Veneered Stock—None but Expert Labor—
Ample Supply of Veneers—Skilled Required in Matching**

Until a short time ago the average furniture buyer was skeptical about veneered furniture. The word veneered seemed to mean an imitation. The dealer disliked to tie up capital in veneered goods and would say: "I'll admit that the piece looks very beautiful but I cannot tell my customers the piece is solid and unless I can assure them on that point, is useless for me to try and make the sale."

The furniture manufacturer, dealer and buyer have been taught that good veneered furniture made from properly selected stock, well matched, etc., means the highest quality and furniture value. The furniture buyer is demanding this class of goods. Investigators have learned that solid furniture will not stand the test of time because it will take on moisture and leave it out again and this sort of treatment means opening of glue joints, loose dowels and eventual falling apart of the particular piece of furniture. All panel makers have made a thorough study of modern veneering and one will observe in visiting furniture and piano manufacturing plants that veneer is laid quite differently from ten or twenty years ago. The man in charge of the veneer room is an expert. He knows how to select veneers and can tell at a glance whether sound or unsound, ruptured, etc., whereas a few years ago veneer was bought largely on price and used because the manufacturer thought it cheaper than using solid stock.

Damp Veneer for Future Trouble

One does, however, find a factory now and then where little attention is given to the essential details of veneering. I noticed some beautiful pieces of furniture but a few days ago having been manufactured in a very popular factory and upon close inspection discovered to my surprise very fine checks in the veneer. There is no doubt but that these checks were not visible when the pieces were at the factory and, knowing of the reputation of the manufacturer, the pieces would not have been shipped in the condition I found them. It is this sort of thing that is losing business for some of our friends and in these days of keen competition it certainly does not pay to ship goods to a first class furniture dealer that are not right in every respect. The dealer knew that the goods were right when unloaded at the store. He had dealt with this particular manufacturer for a number of years but never had reason for complaint. He could not understand the cause of this evil. What was the trouble? Simply this, the veneer was likely kept in a damp place and, instead of drying, was applied. Therefore, when it actually started to dry, after being glued to the core stock, it was bound to check.

Some manufacturers do not seem to anticipate their veneer requirements and wait until they are nearly out of stock before replenishing. What is the result? At or about the time the veneer arrives, the veneer room foreman finds that he is entirely out of stock and the men are told to take a liberal portion to the veneer room, bundles are opened and the stock used at once. I have seen veneer used that way time and again and remember one instance where the veneer had been exposed to the rain during the haul from the freight

house to the factory. What is the good of a re-dryer if it is not used, or, if permissible to use a quantity of green veneer and the user expects to get by with it, why not use all the veneer that way and save the expense of re-drying. We cannot emphasize this point too strongly. Dry your veneers before using them.

Headwork Needed for Matching

Another point well worth emphasizing is the matching of veneers. It is true we have discussed matching pro and con, in a number of articles, nevertheless, you need but visit stores in your community and I am satisfied you will find jobs on which much improvement could have been made if proper attention had been given to this important factor. Of course, the average furniture buyer will likely never detect this "passable matching," but you Mr. Veneer Expert will say: "I know positively that I could have improved that job a whole lot. It does seem to me that we should not trust this very important work to any Tom, Dick or Harry and we surely must all realize that better prices can be demanded for pieces of furniture, pianos or on whatever the veneer is applied, if we will use a little "head-work," see that the veneering is artistically matched and, last but by no means least, that the "butt" joints are perfect in all that the name implies.

The writer manufactured and sold furniture to many of the largest dealers in the United States for many years. He has heard some dealers praise, others cuss, veneered furniture. Truly, if the real maker of the veneered parts would have heard some of the remarks I have, yes, coming from men who thoroughly understand their business and are very successful, he would take no more chances on quality but apply the modern methods whether the job is cheap or very expensive. We cannot afford to take chances. The Huns took a chance on fighting the world, but lost out, so will we if we do not do our work properly.—The Furniture Worker.

The Uses of Birch Veneer

About half a dozen woods are more important than birch in the veneer industry, and several dozen fall below it. Its rank, therefore, is pretty high among the woods on which Americans depend for their veneers. Nearly twenty-five million feet of birch logs are consumed annually in the manufacture of veneer, and about half of the material comes from the forests of Wisconsin, with lesser amounts from Michigan and Maine, and a dozen other states.

Birch veneer is not all of the same kind or class. Three or four species of birch are large contributors to the general supply, and three or four others contribute little or none. All the producers of veneer among the birches belong in northern states, for birch is rather scarce farther south, and what is found in the southern region is not often reduced to veneer.

Sweet birch that tastes like wintergreen, and yellow birch, furnish most of the veneer that goes into furniture, interior house finish, and musical instru-

ments, while paper birch yields a pretty large quantity of certain kinds of veneer.

It is not practicable to determine from statistics how much veneer is made from each of the different birches; but paper birch supplies a large share. Some of it is intended for the manufacture of thin dishes and plates, and some that is thicker is intended for the use of shoe manufacturers. A portion of the pegs with which heavy soles are fastened on are made from veneer. The shanks which are employed to stiffen the shoe between the ball of the foot and the heel, are cut from sheets of thick veneer, which is usually paper birch. When the shoe peg and the shoe shank reach their final use, they are not commonly recognized as veneer, having passed that stage and assumed another form.

Birch veneer is made in many thicknesses, but most of it is one-eighth of an inch or thicker. The high percentage of relatively thick stock is on account of the considerable quantity used in supplying shoe factories.

The choice wood of sweet and yellow birch, when reduced to veneer, is usually cut thin. That is true in particular, if it is intended for the surface of furniture, musical instruments, or interior house finish, and these are the situations where the best grades of veneer are commonly seen.

The red heartwood of birch is also substituted for cherry with satisfactory results. It looks as much like cherry as like mahogany, but it differs from both if the wood is left plain. It lacks the grain of mahogany and the lustre of cherry; but these differences may be largely overcome by the skill of the wood finisher. Birch is more plentiful and less costly than either cherry or mahogany, and that leads to its substitution for those expensive woods.

However, the largest use of birch is not as a substitute for any other wood, but under its own name and on its own account.—Hardwood Record.

Increasing Production in the Veneer Room

By a Foreman

If he has his heart in his work every superintendent has an ideal factory in mind; also an ideal method of doing his work. The superintendent cannot, however, always induce the firm to adopt his point of view. Under these circumstances the only course to pursue is to make the best of what is at hand.

A certain manager wanted a hydraulic press to attend to the increased amount of stock going through the veneer room. The owners could not see their way clear to purchase a power press. The manager was thus thrown on his own resources. It was up to him to provide increased facilities for veneering the stock. The hand press in use was a large sized one, taking about five feet of veneered stock some 30 inches wide. As it was customary to leave the large flat stock in the press all night, only one batch a day could be laid, with the additional use of the press for laying small stuff in between batches. To overcome this shortage of press accommodation, the manager constructed a large slip press. It was built in the usual way, round iron bars fitting into a slot at the bottom, with heavy maple pieces across the top and a slot in them for the iron upright to fit into. These bars were placed along both sides and were tightened securely by a key made for the purpose. The bottom of the press and the running board were greased. With the aid of this device they were enabled to turn out nearly

double the work at very little additional cost. True, this press was crude compared with the modern power press, but when a manager is confronted with a problem of getting out more work and is unable to persuade his employers to install the latest machinery, it is little use saying "if I only had this or that." Such a course never gets a workman anywhere, and the manager is likely to provide a substitute in his place.

Another case is that of a traveller endeavoring to sell a firm a portable electric drill. It was a good machine, but a little heavy to handle. The price was rather high, so the manager decided to set one up himself. This he did by getting the power from the shafting. The drill is much lighter to handle and does the work equally as well and better than some electric drills.

In the hands of a practical man it is surprising what a number of improvements and labor-saving devices can be fitted up at a minimum of expense. Many foremen apparently are dilatory in advancing ideas for labor-saving devices or installations in their own departments. They will work day after day by the same stereotyped methods, scarcely giving thought to an up-to-date system. Such men allow themselves to get into a rut and unconsciously move around in a circle, never looking for a larger sphere of operation or seeing beyond the present narrow limits of their daily routine.

New Warehouse for Sovemanco

The Southern Veneer Manufacturing Co., Louisville, Ky., are working on a new one-storey loading warehouse, 110 ft. long. This will give additional storage room as well as aid the loading of cars.

WHAT WE OFFER

VENEER—

Rotary cut Gum, Poplar, Maple, Oak, Walnut. Sliced Walnut, Mahogany, Oak, Cedar.

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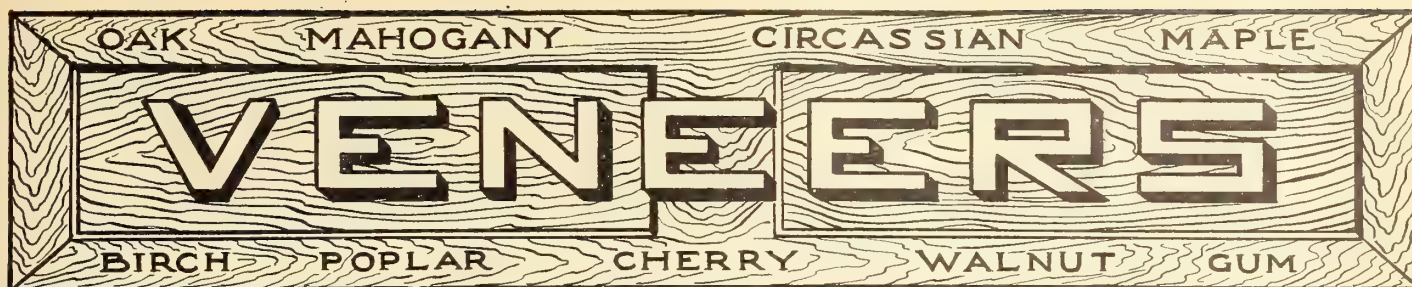
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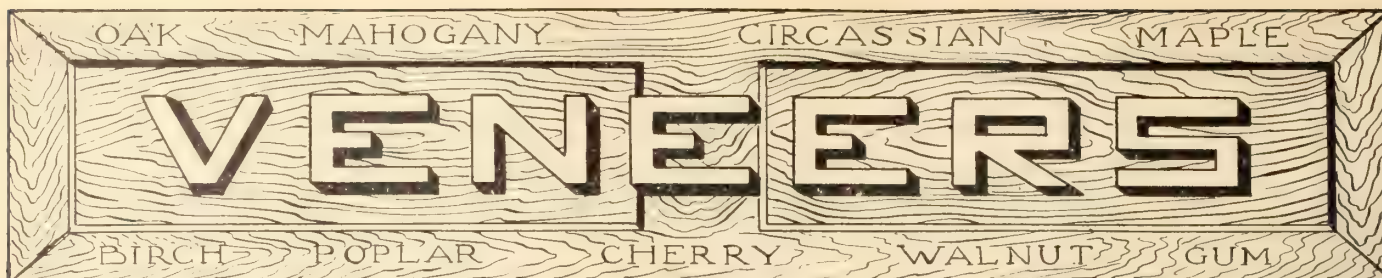
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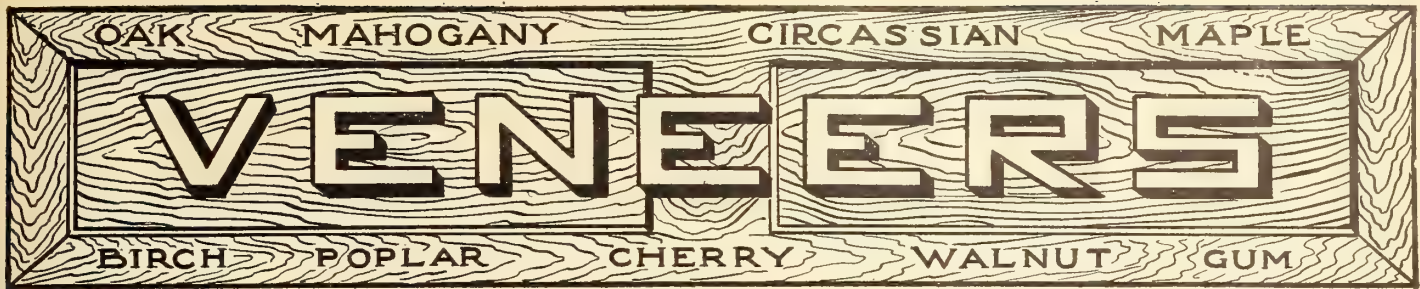
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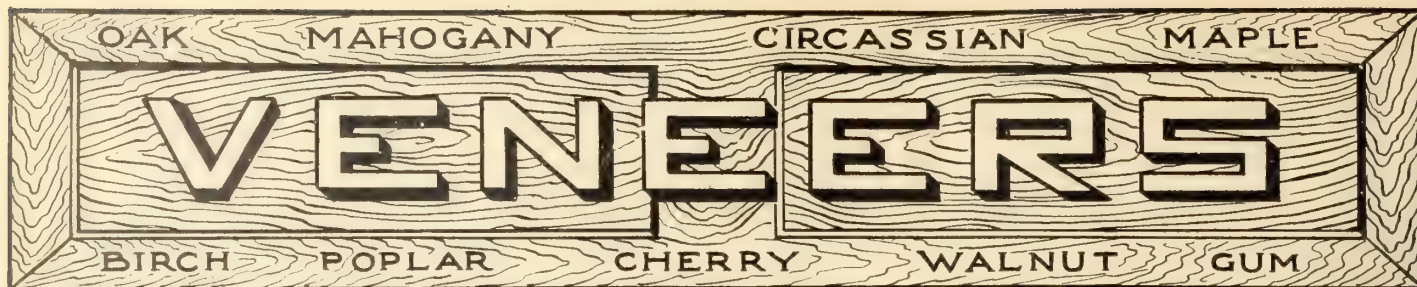
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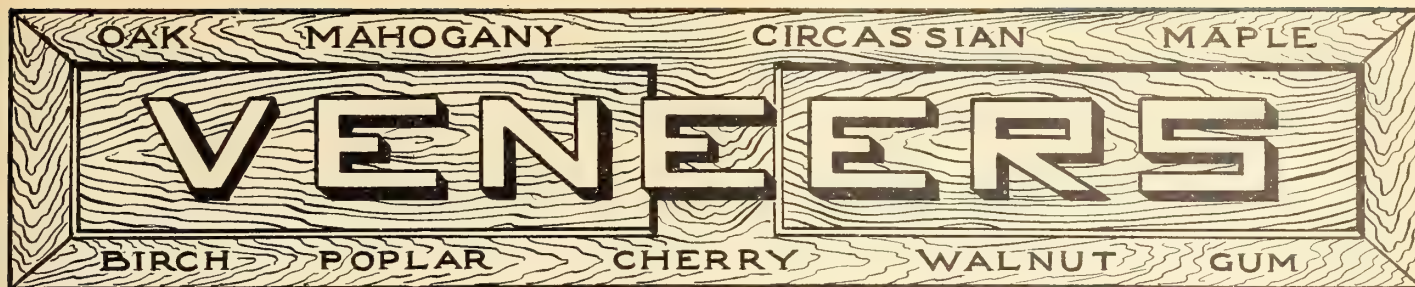
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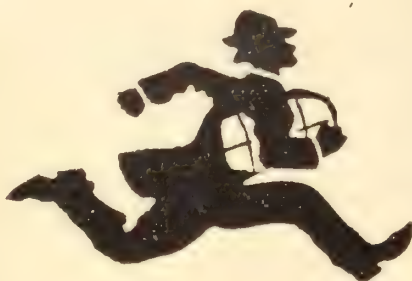
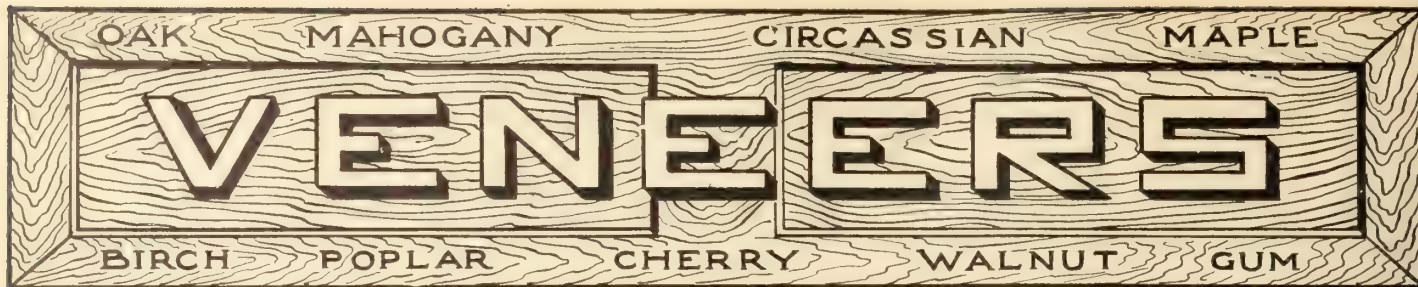
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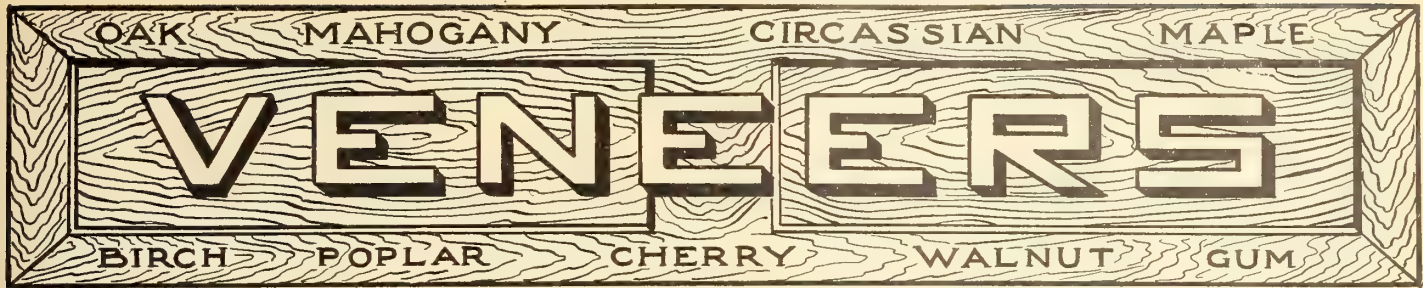
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125,000'	1/16"	8-36"	48-104"	150,000'	1/8"	6-36"	36-104"	200,000'	1/16"	8-36"	48-104"
100,000'	1/8"	6-36"	36-104"					225,000'	1/8"	6-36"	36-104"
RED OAK Sheet Stock				SAP GUM Sheet Stock				50,000'	1/8" Fig.	6-36"	36-104"
Wide				Wide				CYPRESS Sheet Stock			
150,000'	1/15"	8-36"	48-104"	350,000'	1/20"	8-36"	48-104"	Wide			
175,000'	1/8"	6-36"	36-104"	400,000'	1/15"	8-36"	48-104"	Long			
				250,000'	1/8"	6-36"	36-104"	100,000'	1/16"	8-36"	48-104"
POPLAR Sheet Stock				SAP GUM Log Run				200,000'	1/8"	6-36"	36-104"
Wide				Wide				ASH Sheet Stock			
125,000'	1/20"	8-36"	48-104"	170,000'	3/16"	6-36"	36-104"	84,000'	1/20"	8-36"	48-104"
175,000'	1/15"	8-36"	48-104"	250,000'	1/4"	6-36"	36-104"	76,000'	1/15"	8-36"	48-104"
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Here's Good News for You, Mr. Furniture Manufacturer

Now that the war has been brought to a successful termination and the United States Government has released walnut for commercial purposes, we are again running our veneer mills at full capacity. During the last year and a half we have accumulated some of the finest and best figured walnut logs that we have ever had in our possession. These stumps and figured logs are now being manufactured into veneers and we are in position to offer the finest line of walnut veneers that has ever been on the market.

Penrod Walnut & Veneer Co., Kansas City
Missouri

Using Thinner Plywood

By D. C. L.

When aeroplane construction was at its height numerous investigations were carried on and a series of experiments were performed to determine the value of different materials for that work. Lightness and strength were prime requirements and considerable attention was given those two qualities. One result was to bring out the wonderful strength of built-up plywood. While to some extent this had been realized before, yet the actual strength of such stock as shown by tests was a revelation to the average woodworker.

It was found that panels of extreme thinness were possessed of wonderful strength and were able to pass the exacting tests that were given to all material for aeroplane work.

As an illustration a hydro-plane has recently been constructed in which nothing but built-up panels were used throughout. For wing covering, a four-ply panel one-eleventh of an inch thick was used, each ply being one-forty-fourth of an inch in thickness, yet the finished plane was so strong and rigid that a man of average weight could walk on any part of the wings without any fear of the machine being damaged.

From the known results of the investigations that were carried on and the results that were achieved through their actual use, the practicability of the thin panel seems to have been established. If a three-sixteenth panel can successfully replace a three-eighth one for aeroplane construction, would not same hold true for the manufacture of furniture and different forms of woodwork?

In this connection the writer noticed some very thin three-ply stock in some furniture he was looking at recently. It made him wonder if the furniture manufacturers were not beginning to realize the advisability of using thinner stock. If so, it marks the beginning a move in the right direction. The thickness of the three-ply used in case backs and bottoms also drawers bottoms could be materially reduced. In fact, it would seem that a reduction might be made where ever built-up stock is used.

In addition to a slight saving in the cost of material there are a few other economies that would result. The difference in weight would be a big item. Freight rates are very high at present so that a reduction of from ten to twenty-five pounds, in the shipping weight of a case, would mean an appreciable saving in the amount of money that the dealer would have to pay for freight. As the haul increased in length the amount saved would also increase. This is a point that would have a strong appeal to the retailer and the consumer and would have a slight tendency to increase sales.

Determining Glue Values

By Glue Foreman

All woodworkers appreciate the value of knowing that they receive the grade of glue that is paid for and that the glue in question is best suited for the work in hand. There are so many methods of testing glues, from plain guesswork to elaborate tests requiring expensive instruments, and the results vary to such an extent that the ordinary glue user hardly knows where he is at.

The viscosity and the jelly tests are very reliable methods of determining the physical qualities of the different grades and batches of glue. These two tests are best made together, however, for owing to the fact that a low grade glue may be treated, to give good re-

sults in the viscosity test, without adding to the adhesive property of the glue. For this reason it is not a reliable method when given alone, but when the jelly test is used with it the results give a good indication of the quality of the glue tested.

In making the test for viscosity, water is usually taken as the standard. The length of time a solution of glue, mixed in certain known proportions and at certain temperatures, takes to run through a certain sized hole compared with the length of time the same quantity of water takes to go through the same sized hole gives the relative viscosity of the glue solution.

There are several instruments on the market for making tests to determine the strength of the jelly and some through the use of graduations give very accurate readings. The price of these high class instruments are such that they are practically out of the reach of the ordinary glue user.

A very simple instrument, one that can be made in any factory, consists of a dish which is placed on the surface of the jelly to be tested and into which shot or other articles are put. The depth of the impression a known weight will make or the weight required to make a certain impression is taken as a standard and in this way the relative strength of different jellies may be obtained. One point is that all jellies should be made with the same proportions of glue and water and should be tested at about the same temperature.

Some men who handle considerable glue are able to secure very satisfactory results from what is commonly called the finger test. The jelly is made in certain proportions as above and the tester simply presses his finger tips on the jelly and compares its resisting power with that of a known standard. While this is not by any means an accurate test, as much is left to the judgment of the operator, it is surprising how the sense of touch develops through practice until one is able to detect very slight differences in the strength of the jellies handled.

In making standards with which to compare the results of the different tests it is well to take a few samples from some stock that has given very satisfactory results under all conditions and then strike an average of the results secured from the several samples. In this way a fair standard of comparison may be obtained.

Laminated Material for Handles

As a result of experiments at the Forest Products Laboratory with building up smaller walnut pieces into blanks for gunstocks there has come the suggestion of laminated handles, of built-up blanks so as to utilize the smaller pieces of hickory and other valuable woods.

This may hold good, now that we have moisture-proof glues, with stiff handles, that is handles which are not called upon to spring or bend in use. But where the elements of elasticity and resiliency are called into play the built-up idea will not serve. To build up wood, whether it be in thin sheets, small squares or large bulks, is to add an element of stiffness, and to practically eliminate elasticity.

There are various types of stiff handles for which built-up work should serve very well, and the practicability of it in such work will depend upon the cost of the built-up blanks as compared to solid blanks. But in that branch of the hickory handle trade where elasticity is an essential element laminated blanks will not do.—Wood Turning.

Integrity is the Foundation of Permanent Success

FOR more than a generation this company has been building a growing success on a clean-cut policy of doing the right thing by everyone with whom it comes in contact.

This integrity is reflected in the timber it buys—it has sought and purchased only the choicest; through the equipment and supervision for manufacturing the highest quality of product; though the organization that establishes and maintains contact with those who buy its product.

The Anderson-Tully Company stands at the front today in its business because it has steadfastly endeavored to give the full measure of value in quality and in honest service to its trade.

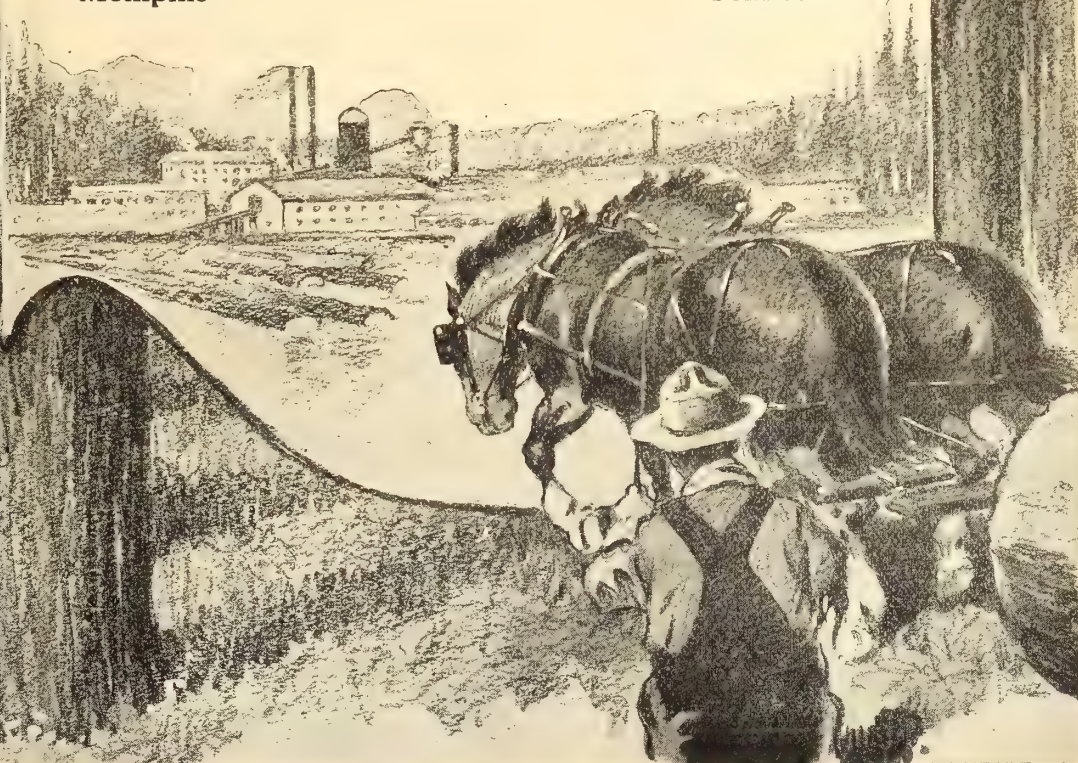
That policy, backed by a full variety and ample stock of southern hardwoods, is a latent asset for your 1919 purchases.

70,000,000 feet a year of Hardwood Production.

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Newsy Jottings of Interest

The Empire Phonograph Co was recently registered at Toronto.

The Standard Toy Mfg. Co. have recently registered at Toronto.

Grimsby Steele Furniture Co., Grimsby, Ont., have been granted a charter.

Fire destroyed the planing mill of E. J. O'Rielly, Killoloe Station, Ontario.

John Carlyle, Toronto, showcase and furniture manufacturer, died recently.

Joseph Lewis of the Elgin Handle Co., St. Thomas, recently died in that city.

The Preston Chair Co., Preston, Ontario, are announced to have assigned recently.

Benoit & Mathieu, Montreal, have taken over the sash and door factory formerly operated by Benoit & Fils.

Fire occurred in the plant of the Ontario Spring Bed & Mattress Co., London, Ont. The damage done was slight.

Soule & Christie, Cowansville, P. Q., carriage makers, have dissolved partnership.

Standard Bedding Co., Toronto, are erecting a two storey factory at Davies Ave. Cost \$20,000.

Jas. Shulman, Toronto, manufacturer of beds, has disposed of his business to John E. Lynch.

Henri Bourgie, limitee, Montreal, recently incorporated with \$20,000 capital to operate mills, factories, etc.

The assets of the Victoriaville Doll & Toy Mfg. Co., Limited, Victoriaville, P. Q., are being disposed of.

Jas. Lacroix, Ottawa, Ont., will rebuild his furniture factory that was recently destroyed by fire a short while ago.

The Montreal Woodwork Mfg. Co., Montreal, formerly a partnership will in future be carried on by Wm. Finklestein.

Wm. P. Godard, Toronto, died recently. For many years Mr. Godard conducted an upholstering business in Toronto.

Chas. G. Thompson, Sherbrooke, P. Q., has registered under the name of Thompson & Co., and will manufacture bobbins.

Montreal Pattern Works, Montreal, has been taken over by Geo. Underwood, Alfred E. Porteous and John S. Grant.

McAllister Self-Making Bed Company of Canada, Limited, has been formed with head office at Toronto. Capital \$50,000.

Midland Woodworkers, Ltd., Toronto, incorporated as general woodworkers, box manufacturers, etc. Capital \$500,000.

Les Ateliers de Menuiserie d'Amos limitee. Capital \$20,000. Incorporated to manufacture and deal in wood products of all kinds.

The Corona Phonograph Co., Ltd., has been incorporated to manufacture phonographs, pianos, etc. Capital \$149,000. Head office, Montreal.

W. F. Dennis died recently in Toronto. Mr. Dennis was superintendent of the W. F. Bryans Co., Collingwood for a number of years and latterly was with the Canadian Aeroplanes, Limited, Toronto.

The Capital City Box Co., Limited, Edmonton, Alta., write that business is very good at present and they anticipate a very busy season.

Zimmerman Bros., Ltd., who have been carrying on a woodworking business at Tavistock, Ont., have incorporated with a capital of \$150,000.

Santauriski Lumber Co., Ltd., Donnacona, P. Q., recently incorporated to manufacture and deal in wood products of all kinds. Capital \$200,000.

The Gem Cradle & Crib Company of Canada, Kitchener, Ont., has been formed to manufacture a line of children's furniture both in wood and reed.

The planing mill, saw mill and furniture store of W. H. Heath & Sons, Wallaceburg, Ont., were destroyed by fire. Loss \$17,000. Owners plan to rebuild.

The British Possession Exploration Co., Limited, Toronto, have been incorporated to manufacture and deal in 'umber and wood products. Capital \$40,000.

Geo. Rathbone Limited, Toronto, manufacturers of sash and doors, interior woodwork, etc., are building a two storey brick factory 50 ft. by 55 ft. Cost about \$8,000.

Chas. McGibbon, Pentanguishene, died recently. He was a member of the firm of the McGibbon Lumber Co., Pentanguishene, planing mills and lumber dealers.

Joseph A. Daoust, Ltd., St. Anne de Belleville, has been incorporated, with a capital of \$20,000, to erect a planing mill and deal in wood-products, lumber, etc.

The Thompson & Heyland Lumber Co., Limited, Toronto, has been incorporated to manufacture and deal in wood products and lumber of all kinds. Capital \$40,000.

Mr. G. R. Hackett, of Robertson & Hackett Sawmills, Ltd., Vancouver, has been elected chairman of the lumbermen's section of the Vancouver Board of Trade.

Among the companies recently registered were the Boston Bedstead Co., Montreal, the Reliable Show Case & Fixture Co., Toronto, and Woodwork Supply Co., Montreal.

La Compagnie des Terrains de Vimy, capital \$50,000. Head office Montreal. Incorporated to operate a factory, sawmill, etc., and to deal in lumber and wood products.

Hourd & Co., Limited, London, Ont., are installing a C.M.C. 42-in. revolving bed sander. They have also recently added a C.M.C. No. 611 straight edging and jointing machine.

Mr. G. H. Willis, secretary-treasurer of the A. P. Willis & Co., Ltd., piano manufacturers, Montreal, died on March 28th, from pneumonia, after a week's illness. He was 35 years of age.

The Globe Furniture Co., Limited and Snyder Bros. Upholstering Co., Limited, of Waterloo, Ont., adopted the nine hour day on April 1st. The employees were delighted, as the reduction was not expected before May 1st.

Fire damaged the planing and wood turning mill of George Venator, Hamilton, Ont. The blaze was confined to the second storey and roof but the water did considerable damage to the machines and stock on the lower floor. Loss \$4,000.

P. W. Gardiner & Son, Galt, Ont., manufacturers of sash, doors, etc., have about completed a new office. When this is finished the whole front of this big plant will present a

"Jim, can you tell me just what our labour costs are, to make that No. 281 dresser?"



What this Cost Recorder will do for You

It will prevent time losses.
 It reduces your time to a money value.
 It will increase your production.
 It insures the greatest purchase you make—your labor.
 It will bring mechanical accuracy and legibility to your cost records.
 You will have reliable records made by your workmen without their doing any clerical work.
 It will prevent a false balance of cost records.
 It will enable you to compute the exact elapsed time on each and every job.
 It will protect employer, employee and customer.
 It prevents error in record.
 It furnishes a double check to your payroll.
 It will protect your labor costs and your labor investments.
 It serves as the only means for getting complete, accurate and intelligent time records.
 It will locate the efficient workers for you.
 It checks your foreman as well as your workmen.
 It prevents dispute between your workmen and your foreman.
 It forces the making of cost records.
 It is the lowest cost method of getting proper costs.
 It costs you more to be without than the cost to install.
 You are paying for it now—why haven't you got it?



Jim couldn't do it. He could give an approximate cost figure, but he couldn't say for sure that it was exact. He knew that Bill and Tom and Harry and Jack and a few other workmen had worked on it, but couldn't say how much. They had each been told to do their work on it in turn and pass it on to the other fellow. But Jim had no way of giving the manager the exact manufacturing costs of the dresser.

International Cost Recorders

will eliminate this uncertainty about production costs. They will give an accurate, printed statement of the exact time spent on any job by every man who worked on it. It enables you to quickly compile the costs of each operation and the time lost between each.

The Cost Recorder is a necessary part of your factory equipment. Without it you cannot accurately and properly arrive at your selling prices.

The old pencil and paper way of keeping costs is too uncertain—mistakes are liable to happen in them, the figures could be changed.

The lack of a modern cost system may be losing money for you every day. It's worth a little investigation. Let us help you with it and you will benefit by the years of experience of our successful system engineers.

A post card will start our literature on the way to you.

International Business Machines Co. LIMITED

Time Recorder Division

FRANK E. MUTTON, Vice-President and General Manager

Royce and Campbell Avenues

TORONTO

ONTARIO

very neat appearance. They are in a position to take care of a big business when the building trade shows more activity.

Incorporation papers have been taken out by the Matheron Products, Limited, Matheson, Ont., to manufacture and deal in lumber and any article that the manufacture of wood enter into. Capital \$100,000.

The Wilson Box Co., St. John, N. B., are making additions to their box factory at Fairville, N. B. The output will be increased about 50 per cent. They also operate box factories at Westfield, N. B., Bonny River, N. B., and Cambridge, N. B.

The city of Winnipeg has been asked to assist in the establishment of a furniture factory for the benefit of returned soldiers, particularly those who have been maimed. A committee has been appointed to investigate and a report is expected shortly.

Maxime & Co., Limited, 8-9-10 Featherstone St., London, Eng., manufacturers and importers of furniture, domestic woodenware, brushes and turnery are desirous of getting in touch with firms who manufacture wood products that are in demand in Britain.

The Danville Manufacturing Co., Ltd., Danville, P. Q., operate a modern up-to-the-minute plant. Their product includes spring clothes pins, broomhandles and dowels, paper rool plugs, wooden shoe stands, etc. Almost their entire output in certain lines is taken by their export trade.

The furniture manufacturers of Ontario have petitioned the Dominion Government for an Industrial Council along the line of the Whitley Council. They have asked that the Canadian Manufacturers' Association be recognized as the official body representing all furniture manufacturers.

J. C. Dietrich, Galt., Ont., is possibly Galt's oldest manufacturer. He went to that city in 1873 and in conjunction with the late C. Shurly established the Shurly-Dietrich Saw Works. Mr. Dietrich is still in harness, though past his 80th birthday and is in point of actual service the oldest manufacturer there.

R. A. MacGillivray has taken the position of manager with the Kitchener Furniture Co., Kitchener. For the past twelve years Mr. MacGillivray has been superintendent of the Crown Furniture Ltd., Preston, Ont. Before leaving Preston he was presented with two easy chairs by members of the staff.

The Shingle Manufacturers' Association of British Columbia have organized a school for the training of white sawyers and packers to replace the Orientals that are at present employed in the shingle mills on the coast. Returned men are given the preference and at present a number of soldiers are taking the course.

Chesley Chair Co., Ltd., Chesley, Ont., intend using Hydro power and have installed a Canadian Westinghouse constant speed induction motor with auto starter. This will enable them to about double their output. They report that business is very good, orders coming in faster than they have been able to make the goods.

The Purdy Phonograph Co., Toronto, are engaging in the manufacture of phonographs on an extensive scale. They have secured suitable premises on Hayter St. and are installing an up-to-date plant. The equipment includes sanders both belt and drum, saws, buzz planer, boring machine, shaper and other light machinery. They expect to commence operations some time in May.

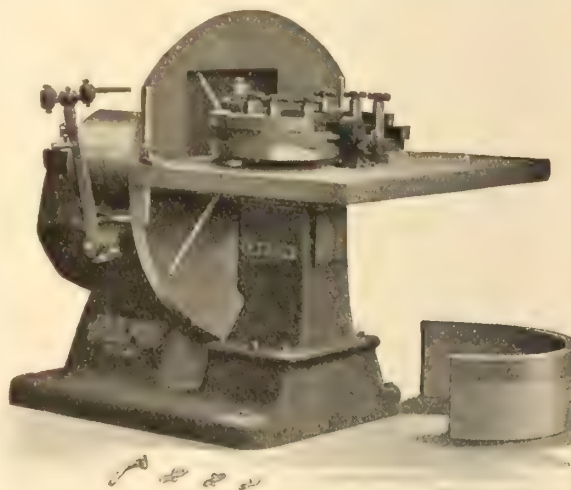
The Canada Furniture Mfg. Co., Limited, Woodstock, Ont., put into effect, on April 1st, a new working agreement with their employees. Instead of working 9 hours a day with a Saturday half holiday during June, July and August, the men prefer to work 10 hours a day for 5 days a week and have a Saturday half holiday the year round. The rest of the

agreement is practically the same as that outlined by the Stratford Conciliation Board.

The following have been elected as directors and officers of Willis & Co., Ltd., piano makers, Montreal: Mr. A. P. Willis, president and general manager; Mr. R. A. Willis, vice-president; Mr. Geo. L. Duncan, treasurer; Mr. Geo. H. Willis, secretary; Messrs. A. S. Benoit, A. Desjardins, F. G. Sharpe, W. D. Willis and C. D. Patterson, directors. It was reported that the company had done in 1918 the largest volume of business in its history, but that the cost of raw materials and labor had substantially reduced the margin of profit.

Outside Rim Shaping Machine

The shaping machine illustrated on this page is a single purpose machine and intended for shaping the outside surface of truck wheel rims after they have been shaped and sanded on the inside. This operation removes irregularities in the rim, and reduces it to an even thickness. It will accomodate rims from 1 in. to 4 in. thick, of any width of tread not exceeding 14½ in., and of any inside diameter running from 24 to 40 inches. The frame is cast in one piece with a core



No. 807 Motor truck run outside shaping machine

centre, and is of sufficient weight to absorb all vibrations when the machine is in operation. All parts are properly braced to maintain them in their original alignment for a long period of use. A disc type of cutter head, 40 in. in diameter, is used. A steel band is shrunk over the rim. This construction allows the head to be rotated at a high rate of speed with a wide margin of safety. The four capped knives which are fastened to the head, are placed at an angle to effect a shearing cut, thus eliminating the tendency of the knives to tear the stock.

The guard is placed over the cutter head to prevent accidental injury to the operator. Three pair of fan shaped guide forms are used. These are pivoted in the middle of the arc. As only one pair of guides is used at a time, each pair is provided with separate tie posts, and is adjusted independently. The forms are mounted on the slide, which supports the idle feed roll and which has an adjustment to and from the cutter head. The slide is mounted on a table which supports the rim as it is fed around the form to the shaping knives. Capacity from 50 to 100 half rims per hour.

This shaper is manufactured by The Defiance Machine Works, Defiance, Ohio.

Mississippi Delta

Gum

Quartered and Plain
Red and Sap

Oak

Quartered and Plain
Red and White



The
KORN-CONKLING Co.
CINCINNATI, OHIO

Mills; Percy, Mississippi

"WELL BOUGHT IS HALF SOLD"

**We Invite Your
Inquiries**

on the following

**Dry
Hardwoods**

- 1 Car 4/4 in. No. 2 Com. and Btr. Beech.
- 2 " 4/4 in. No. 2 Com. and Btr. Basswood.
- 1 " 8/4 in. No. 2 Com. and Btr. Basswood.
- 3 " 4/4 in. No. 3 Com. and Btr. Birch.
- 1 " 10/4 in. No. 1 Com. and Btr. Birch.
- 1 " 16/4 in. No. 1 Com. and Btr. Birch.

We Specialize in

SPRUCE CRATING
ALL SIZES

**Canadian General Lumber
Company, Limited**

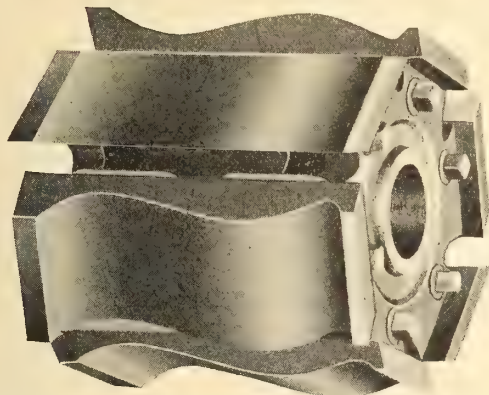
712 Bank of Hamilton Bldg.
TORONTO

MONTREAL OFFICE: 203 McGill Bldg.

Selling

**Graves, Bigwood & Co.'s
Lumber, Lath and Box Shooks**

The Diehl Adjustable Cutter Head
For Jointers, Shapers and Stickers



**National Sweeper Company Has Used Diehl
Cutter Heads for Over Six Years**
—Still Using Them

All of their moulding machines and two of their shapers are equipped with Diehl Cutter Heads. They say: "We have previously used numerous styles of heads and knives, but have found your adjustable head the most satisfactory of any."

The G. M. Diehl Machine Works
Wabash, Indiana

The Lumber Market

Domestic Woods

The local lumber situation is very satisfactory. Orders are being placed more freely, and the demand is increasing slowly from week to week. Prices are being well maintained, and at present there is no indication of an immediate reduction from present quotations. In some localities, considerable building is going on, and many building permits are being taken out. These in time will have a beneficial effect on the lumber trade. Dry 4/4 and 5/4 birch and maple are practically off the market. Dry 6/4 is very plentiful, with very little moving. The thicker stock is in greater demand. The Michigan operators are endeavoring to work off some 4/4 and 5/4 hardwood at a slightly reduced price. Owing to the quotations, the local mill men are making at the mills, the dealers in domestic hardwoods are finding it difficult to meet the competition. Conditions are reversed on the heavier stocks. The lumbermen from below the line are forced to buy this material in the local market and must pay the prices that are being quoted. There has been a slight change in the soft wood market. The dealers report that business is very satisfactory for this time of the year, and that the demand is steadily increasing. Orders are coming in freely, and a fair amount of stock is being moved. Hemlock is in fair demand and the prices are very firm.

Ottawa reports an advance of from \$4 to \$7 per thousand on mill run and better grades. This is chiefly due to some sales that have been made for shipment to Europe. Spruce and red pine deals are in good demand. On the whole, the outlook is very promising. Most dealers maintain that as the prices are not likely to be reduced, in fact there may be a slight advance, the present is a very advantageous time to buy.

Imported Woods

Reports from the different market hardwood centres indicate that conditions are steadily improving. Buying is becoming more general, and while the buyer still persists in dickering for lower prices, prices on the whole are remaining very firm. The high peak of hardwood prices seems to have been reached in December, and since that date there has been a drop amounting to \$2 in the composite figure of all prices. This indicates a very strong market, as in reckoning this figure the excessive price of special hardwood items would tend to raise the average on the regular line of commercial stock. Composite figures for all hardwoods as given for March 1st, is \$58.60. The fact that certain hardwood manufacturers are refusing to accept contracts calling for future orders at prevailing prices, would seem to indicate that the situation is fast reaching a stabilized basis; also that the consumer is beginning to realize that the true conditions in the producing sections are such that he had better take steps to insure his future supply. The different mills are nearly cleared out of surplus stock.

With the growing demand for staples and a shortage of logs, one would naturally expect, at least, a firm price on all hardwood items for some time to come. Oak and gum have both shown slight advances. There is a strong demand for quarter oak at St. Louis,

with an apparent shortage of stock. Prices on this commodity are firm or showing an upward tendency, with the buyer willing to pay the price. The situation in the northern states indicates a slight improvement. The production of logs is increasing in the North while in the South, the shortage is becoming more acute. Memphis reports that the stocks of southern hardwoods is showing a further decrease, and indications point to a shortage in the near future. The demand is increasing daily with a decreasing output. Gum and oak are the best sellers, quartered white oak being extremely scarce. Building operations are developing to an encouraging extent in most sections. Speculative builders are still standing pat, and will probably continue to do so until they are thoroughly convinced that building supplies will not materially decrease in price in the near future. The demand from the building trades is still inclined to be spotty, while the tendency is to resume contract purchases, it is in most cases confined to stock that is needed for immediate requirements. The demand in Louisville continues active. The heaviest demand at the present time is for plain and quarter oak. Hickory and ash are good sellers with a fair demand for poplar, elm and gum. Mahogany and walnut are very active, the furniture and cabinet men being the chief buyers. There is a fair demand for the commercial grades of walnut, with a heavy production. The veneer situation shows a decided improvement, high grade stock being very active. In summing up the situation below the line, the impression that most industrials have decided to buy regardless of prices, seems to be gaining ground. The furniture and cabinet men are buying freely with the automobile men as close seconds.

Are Lumber Prices Due to Advance?

At a recent meeting of the Eastern Lumbermen's Association held at Bangor, Me., R. S. Whiting of the National Lumber Manufacturers' Association in explaining why he did not believe that there would be a drop in prices in the near future, mentioned the following factors that favor an advance in prices:

1. Low stocks held by retail yards throughout the country.
2. Recent curtailed production by mills.
3. Greatly restricted building operations.
4. Decreased supply of available timber and its distance from markets.
5. Large amount of capital and uninvested money which may be made available for investment building under proper financial direction.
6. Conscientious effort on the part of wealthy operators to maintain present price levels—that will enable them to secure an equitable profit.
7. Lack of intelligent reforestation by the government.
8. Possible increase in the European trade.
9. Decreased ocean freight rates which have already been reduced 66 2/3 per cent.
10. Unfilled orders actually held by Southern mills.
11. Announced policy by West Coast Lumbermen's Association and other large operators of maintaining wages at present levels as long as high cost of commodities continues.

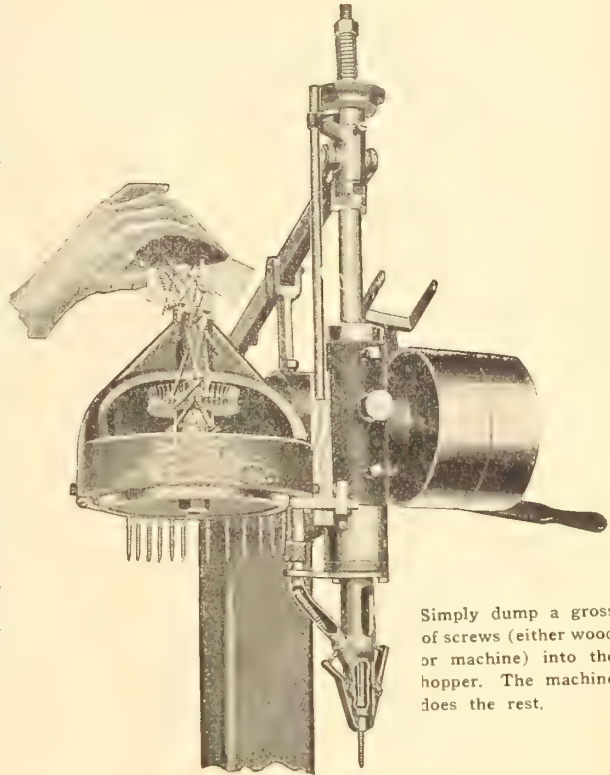
All of the above factors are in force to a greater or lesser extent and are operating to maintain the present level of prices in the lumber industry.

An Automatic Machine That Drives Screws With Human Accuracy and Machine Speed

Driving an average of 1,000 to 1,200 wood or machine screws an hour the Reynolds Automatic Screw Driving Machine is sure to increase your output. Your newest hand can operate it within a short time equally as well as an expert with accuracy and lightning swiftness. Reynolds Automatic Screw Driving Machines will drive nearly all kinds and sizes of wood and machine screws, such as Fillister Head, Hex Head and Square Head Cap Screws, equally well and with the same high speed which will mean a saving of between 25 and 40 per cent. of your labor expense.

Let us send you a copy of our catalog E which fully describes these machines and also a list of users. You'll find them interesting and profitable to you.

The Reynolds Machine Co.
Massillon, Ohio, U.S.A.



Simply dump a gross of screws (either wood or machine) into the hopper. The machine does the rest.



For That Particular Work Use Robertson ^{Patented} Socket Head Wood Screws

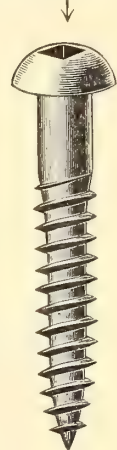
See That Square Hole?



Whether when turning out that special work or just the ordinary everyday run you will find Robertson's Patented Socket Head Wood Screws the most adaptable to your needs. They eliminate the danger of marring, which is so often the cause of trouble with the old style screws. They'll save you time, money and labor, because they drive quicker, look neater and hold better.

We manufacture bits for all styles of power and ratchet drivers, and supply them free with your first order. Our guarantee is behind our product. Our prices and samples await your request. Write us today.

See That Square Hole?



P. L. Robertson Mfg. Co., Ltd.
Milton Ontario

Salesman Wanted

To solicit business in Canada. Must be familiar with the operation of Wood Working Machinery used in Planing Mills, Sash and Door Plants, and Furniture Factories. Address Box 57, Canadian Woodworker, 345 Adelaide St. W., Toronto, Ont. 4

FOR SALE

A few carloads of Spruce Crating 5 1/2" and 1" x 2", 3" and 4" wide, in random lengths.

Stadacona Box Company,
4-7 164 Grant St., Quebec, Que.

Do You Want Machine Tools for Your Repair Shop?

Lathes, Drills, Grinders, Shafting, Pulleys, etc. Now is the time to buy cheaply. We are in touch with munition firms who are selling their tool room equipment. We can supply any tool wanted.

W. H. Sumbling Machinery Co.,
3-4 7 St. Mary St., Toronto.

For Sale

Subscriber offers for sale the following woodworking machinery, all of which are in first class condition and ready for immediate delivery.

- 1—10" McGregor Gourlay 4 side molder, with knives and Shimer heads.
- 1—10' Moore panel belt stroke sander.
- 1—48" 3 drum Columbia sander.
- 1—54" band resaw with automatic blade sharpener.
- 1—30" Whitney single surfacer, with sectional rolls.
- 1—2 spindle shaper, with knives.
- 1—2 spindle Yankee whittler.
- 1—2 spindle hor. boring machine.
- 1—2 spindle ver. boring machine.
- 1—single iron frame trim saw.
- 1—single iron frame trim saw.
- 1—gang emery grinder.
- 1—foot mitre machine.
- 1—hor. hollow chisel mortiser, and boring machine.
- 1—12 spindle dovetailer.
- 3—Reynolds automatic screwdrivers.
- 2—8 chanel open back Morgan nailers.
- 1—doz. cabinet makers' benches.
- 6—doz. hand screws.
- 1—veneer press.

A large quantity of wood pulleys.

Address enquiries Box 58, Canadian Woodworker, or 108 River St., Toronto, Ont. 4-5

Fuel Value of Wood

It takes a cord and a half of short-leaf pine, hemlock, red gum, Douglas fir, sycamore or soft maple, which weigh about 3,000 pounds a cord, to equal a ton of coal, while for cedar, redwood, poplar, catalpa, Norway pine, cypress, basswood, spruce and white pine, two cords, weighing about 2,000 pounds each, are required. Resin affords about twice as much heat as wood, so that resinous woods have a greater relative heat value than non-resinous woods. The heat value of wood depends also on the

moisture content, as heat is taken up in evaporating the water.

Heat value is not the only test of usefulness in fuel wood. Since 95 per cent. of it is consumed for domestic purposes, mostly in farm houses, such factors as rapidity of burning and ease of lighting are important. Different sections of the country favor different woods. Of the non-resinous species, hickory has the highest fuel value per unit volume, and it has another advantage in that it burns easily and holds the heat. Next comes the oak, followed by the birch and maple. White pine, while of a relatively low heat value, burns readily and gives out a hot flame which dies down quickly. This makes it a favorite summer wood, being particularly adapted for warm days in the kitchen. The same is true of white birch. With the resinous pines their oily, black smoke is a drawback.

Sawdust Becoming Valuable

It is not very long ago since sawdust at the mills was considered a nuisance and for the greater part was thrown into the water. If a small quantity of it could be sold now and again, it brought a price of from 1 to 1 1/2 cents per bushel. The largest mills in Norway thought they did well when they could earn from sawdust \$2,000 to \$3,000 a year. Now this refuse has become valuable, the price having risen from 10 to 15 cents, and from the large quantities sold forms a considerable item in the incomes of the mills, some of them now earning from this source \$30,000 to \$40,000 a year. The reasons for this heavy rise in the value of sawdust are several. The high prices of fuel during the last few years have caused sawdust to be employed as fuel. However, sawdust attained its principal value after the cellulose mills commenced to use this material; and thereby it has secured a steady demand and, what is very important for the future, a comparatively high price, when the price of fuel again becomes normal.

A Novel Food

They are eating the trees in Sweden. The people of that country, finding it almost impossible to obtain the necessities of life from their fighting neighbors, had to do something desperate or starve. The chemists, in their search for substitutes, naturally turned their eyes and energies to the forests, with which Sweden is well covered. The result is spruce flour. The product is now being manufactured in sufficient quantities to supply the needs of Stockholm, according to Dr. Bookman, of the American Chemical Society. It is being sold at 40 cents a pound. Before it was put on the market extensive experiments were carried out to make sure of its digestibility. In use it is combined with other flours in the proportion of one to two. The bread so baked is found not only healthful and easily digested, but good in texture and pleasing in flavor.

FOR SALE

Battery of "Bowser" Tanks for Finish Room. Good Condition.

t.f. Box 32, Canadian Woodworker

PETRIE'S LIST

of NEW and USED
WOOD TOOLS
FOR IMMEDIATE DELIVERY

Wood Lathes

- 20" Sidney, "Famous."
- 16" Canada Machinery Corporation.
- 16" Sidney, "Famous."
- 14" Sidney, "Famous."

Wood Planers

- 30" Whitney pattern surfacer.
- 26" double surfacer.
- 24" Champion planer and matchers, moulding attachment (2).
- 24" Galt, planer and matcher.
- 24" Hermance, double surfacer.
- 24" MacGregor-Gourlay.
- 24" Sidney, "Famous," single surfacer.
- 18" Sidney, Famous.
- 12" Perfection, buzz.

Band Saws

- 36" MacGregor-Gourlay, circular, re-saw.
- 36" West Side, pedestal.
- 30" Ideal, pedestal (2).
- 30" Cowan, bracket.
- 30" Goldie & McCulloch, bracket.
- 27" Sidney, "Famous," pedestal.
- 20" Crescent, pedestal.

Saw Tables

- No. 2 Famous, variety.
- No. 2 Crescent, boring attachment.
- No. 617 C.M.C. variety.
- Galt, iron frame, cut off.
- MacGregor Gourlay railway cut-off.
- Greenlee automatic cross-cut.
- 7 1/2' Fay & Egan, swing saw.
- 7' Williams, swing saw.
- Canadian, steel frame, pole saw.
- Vaughan, portable, drag saw.
- Champion, portable drag saw.

Mortisers

- Cowan, upright, power.
- Fay, upright, power.
- Galt upright, compound table.
- No. 5 New Britain, chain.
- No. 1 Smart, foot power.

Moulders

- 13" Clark-Demill four-side.
- 12" Cowan four side.
- 12" Woods four side, inside.
- 10" Houston four side.
- 8" Dundas four-side.
- 6" Dundas sash stickler.

Clothespin Machinery

- Humphrey automatic lathes (5)
- Humphrey double slotters (3)

Miscellaneous

- No. 30 Famous, universal woodworker.
- Fay, horizontal, boring machine.
- No. 920 C. M. C., post boring machine.
- No. 2 Defiance, belt sander.
- Fay & Egan 12 spindle dovetailer.
- MacGregor Gourlay 12 spindle dovetailer.
- No. 1 Ballantine dowel machine.
- Dundas double-head tenon machine.
- 20" Superior saw arbors.
- Hall's automatic shingle machine.
- Waterous lath machine.
- 26" Dominion lath trimmer.
- 6' Linderman, automatic, glue jointer.
- No. 3 Defiance, rim & felloe rounder.
- No. 1 Defiance, axle shaper.
- No. 1 Defiance, spoke driver.

Ask to see our large stock of used supplies—belting, pulleys, machine shop equipment, mill supplies, pipe and fittings. This material is as good as new, and can be bought at greatly reduced prices.

H. W. PETRIE, LTD.
Front St. W., Toronto, Ont.

Perkins Vegetable Glue

Same Old Glue

Same Old Service

Same Old Process

Same Old Guarantee

under the

Same Old Name Perkins Glue Co.

You know what this has meant in your glue room for years past.

A REAL vegetable glue, as good or better than Animal glue, cannot be sold and used for wood joints, which does not infringe our United States Letters Patent, held valid and infringed by United States Circuit Court of Appeals. Corresponding Letters Patent granted in Canada.

Perkins Glue Company

Factory

Lansdale, Pennsylvania

Sales Office:

South Bend, Indiana

NAPCO

Was adopted by the United States Government because the supply was always assured and the quality was absolutely uniform. NAPCO IS

WATERPROOF

To the Manufacturer this feature commands a premium. It is insurance against climatic conditions. Heat and moisture have no effect on Napco. The Government test was 24 hours in boiling water and 24 hours baking immediately thereafter at 212 degrees Fahrenheit. Napco withstood this test without sign of giving way. The public are demanding waterproof products. Are you able to meet the demand? The life of ordinary

GLUE

is affected by heat and moisture. Napco is not affected by either. Therefore its life is assured. There is no wastage to Napco. The ideal glue for all panel, piano, column, sash, door, furniture, and pulley manufacturers. A Napco joint is stronger than wood.

MIXED COLD—APPLIED COLD—TO COLD WOOD—NO HEATING.

Write for Information and Sample to

ROBERT BURY & CO., CANADA, Limited
HARDWOOD AND VENEER MERCHANTS

Head Office
1 Spadina Avenue, TORONTO

Lumber Yard, Warehouse and Mill
Foot Spadina Ave., TORONTO

KANE

VEGETABLE VENEER

GLUE

Quality—None Better

We guarantee that the process used in the manufacture of Kane Vegetable Veneer Glue, and also the dissolving with **water and caustic soda** in the usage of same by the consumer, do not infringe any patents, and particularly the patents recently construed by the Court of Appeals of the Seventh Circuit, or the Decree of the U. S. District Court at Chicago, signed August 5, 1918.

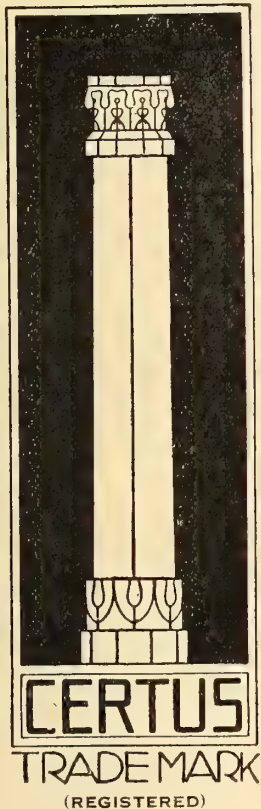
Manufactured and sold exclusively by

KANE MANUFACTURING COMPANY

28 E. Jackson Blvd., CHICAGO

Certus Cold Glue

(The Original Water-proof Glue)



Joint Glue remaining liquid a full working day after mixing.

1. Highest adhesive and water resisting quality.
2. In comparison lowest priced glue on the market.
3. Saves time, labor, heat and trouble.
4. When mixed with cold water ready for use in fifteen minutes.
5. Suitable for all outside gluing even in cold and wet weather.
6. May be used in jointing machines.
7. Glues natural damp (not wet or green) as well as dry lumber, steel, brass, stone, glass, linoleum, cork, cloth, etc., to wood and leather.
8. Stands all climates, even the most humid.
9. Especially adaptable for use in gluing hardwoods of all kinds.
10. Uniform government inspected and sealed.

Write for sample for testing on your special work. Our services are at your disposal.

CERTUS COLD GLUE CO.
Detroit, Mich.

Complete stock carried by
W. H. GAGE GLUE COMPANY
Southern and Southwestern Distributors
114 Pine Street - St. Louis, Mo.

Palmer & Parker Co.

103 Medford St., Charlestown District
BOSTON, MASS.

MANUFACTURERS OF
African, Mexican and Cuban
MAHOGANY

veneers and
Built-up Panels

TEAK and other
Foreign Woods

PRESSES

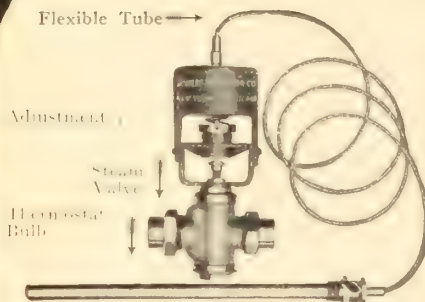
For Veneer and Veneer Drying

Made in Canada

William R. Perrin

Limited
Toronto

The Dollar and the Glue Kettle



The Powers No. 11 Regulator

This Regulator is entirely self-contained, requiring no air or water pressure for operation. Automatic, reliable, and accurate. Peculiarly adapted to the control of liquid temperatures. There is a Powers Regulator for practically every place where temperature control is desirable. Tell us your conditions, and we will advise you how to get right results—saving time, labor, material, and coal, and improving the grade of output.

Do you realize that your good money is knocked off the paddle of every glue kettle in your plant—knocked off onto the floor and no attention paid to it?

Glue costs money. Whenever a glue kettle gets too cool, a quantity of that money is thrown away, because the glue thickens up on the paddle, and must be knocked off.

Automatic Regulation of the heat applied to the glue would positively prevent its becoming too thick or too thin—another prolific cause for waste of glue, as well as other losses.

This point is well worth your study, in these days when every possible penny must be saved to help pay high wages.

We'll send you our Bulletin 138, if you'll say the word. It tells all about our No. 11 Regulator, which is saving money in a good many woodworking shops, and will save money for you, if you'll let it.

Drop us a line, NOW. We'll send it, free.

The CANADIAN POWERS REGULATOR CO., Ltd.

Specialists in Automatic Heat Control
115 BAY STREET - TORONTO, ONT.

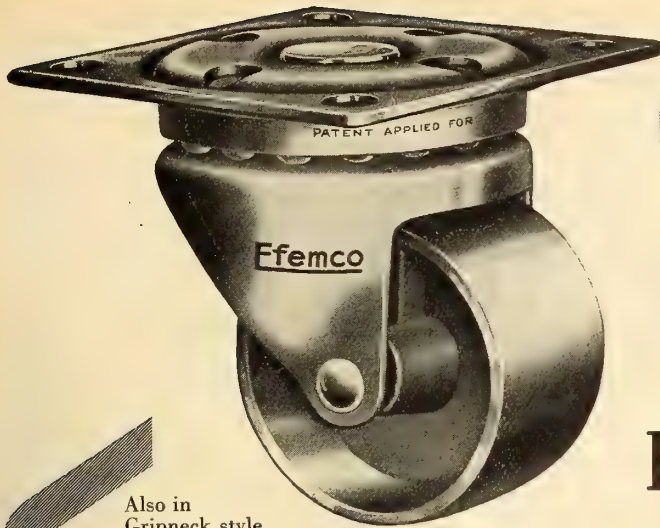
BOOKS FOR SALE

The following books are offered at special prices subject to previous sale:

- Saw Fitting Manual, a treatise on the care of saws and knives Deals with everything in the saw and knife alphabet, from adjustments to widths. 144 pages. Price \$2.00.
- Common-Sense Handrailing, by Fred T. Hodgson. Published by Frederick J. Drake & Company, Chicago. 114 pages, illustrated. Price 50c.
- "Boy Activity Projects," by Samuel A. Blackburn, published by the Manual Arts Press, Peoria, Ill. 144 pages, including 64 illustration plates. Price \$1.25.
- Handrailing Simplified, by An Experienced Architect. Published by William T. Comstock, New York. 52 pages, illustrated. Price 50c.
- "Carpentry," by Ira S. Griffith. Published in 1916 by The Manual Arts Press. 188 pages, illustrated. Price \$1.00.

- Cabinet Making, by J. H. Rudd. Published by Grand Rapids Furniture Record Company. 210 pages, illustrated. Price \$1.50.
- How to Join Mouldings; or, The Arts of Mitering and Coping, by Owen B. Maginnis. Published by William T. Comstock, New York. 72 pages, illustrated. Price 50c.
- The Preservation of Structural Timber, by Howard F. Weiss. Published in 1915 by McGraw-Hill Book Co., 312 pages, illustrated. Price \$3.00.
- Utilization of Wood-Waste (Second Revised Edition), by Ernst Hubbard. Published in 1915 by Scott, Greenwood & Sons, 192 pages, illustrated. Price \$1.50.
- Seasoning of Wood; A Treatise of the Natural and Artificial Processes Employed in the Preparation of Lumber for Manufacture, with Detailed Explanations of its Uses, Characteristics and Properties, by Joseph Wagner. Published by D. Van Nostrand Co., in 1917. 274 pages, illustrated. Price \$3.00.
- "The Kiln Drying of Lumber," a practical and Theoretical Treatise, by Harry Donald Tiemann, M.E., M.F. Just published, by J. B. Lippincott Co. 316 pages, illustrated. Price \$4.00.

WOODWORKER PUBLISHING CO., LIMITED, 345 Adelaide Street W., Toronto, Ont.



Also in
Gripneck style
if preferred.

An **Ffemco**
Product

The ACME PLATE CASTER

Many dealers have been buying our casters for years—some ever since this company first started making them—and we have been established for eighty-four years.

It has been the enduring quality of our products that has meant so much to dealers—and to ourselves.

In this new Acme Plate Caster, we offer one of unusual strength, rigid structure, ease of swiveling, positive space in the rollway, and an extra large axle. It may be had in either plate or gripneck—sizes 1-3-5-7-8-9.

“Compact and sturdy” describes this caster.

It is one you can recommend for durability—the caster to give long service under heavy loads.

Prices sent on request.

FOSTER, MERRIAM AND Co.

MERIDEN, CONNECTICUT U.S.A.

New York Office 225 Canal St.

Ffemco Products

Grip Neck Casters
Ball Bearing Casters
Roller Bearing Casters

Truck Casters
Furniture Trimmings
Automobile Accessories

Piston Rings
Cast Aluminum Ware
Grey Iron Castings



Standardized by
84 years of service

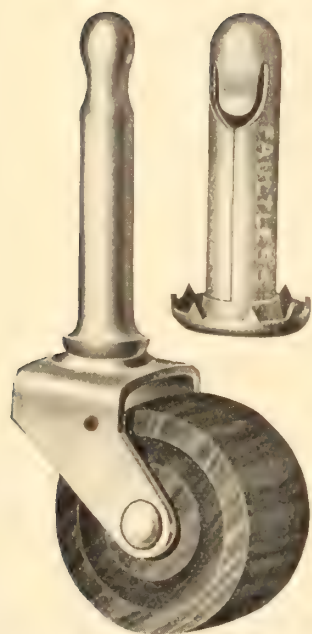
Ffemco Products

Ffemco Products

FAULTLESS

Infinite accuracy of manufacture—
constant uniformity of performance—
knowing what to expect and basing
construction on a known factor of
reliability—simplicity and easy move-
ment.

Fashioned in the belief that the sale
of furniture is severely handicapped
unless it is equipped with casters
able to perform with least effort.
These are features that combine to
invite your SPECIAL consideration
for FAULTLESS PIVOT-BEAR-
ING CASTERS.



Manufacturers of

*Pivot Bearing and Grip Neck
Furniture Casters*

Faultless Caster Co.

Evansville, Indiana





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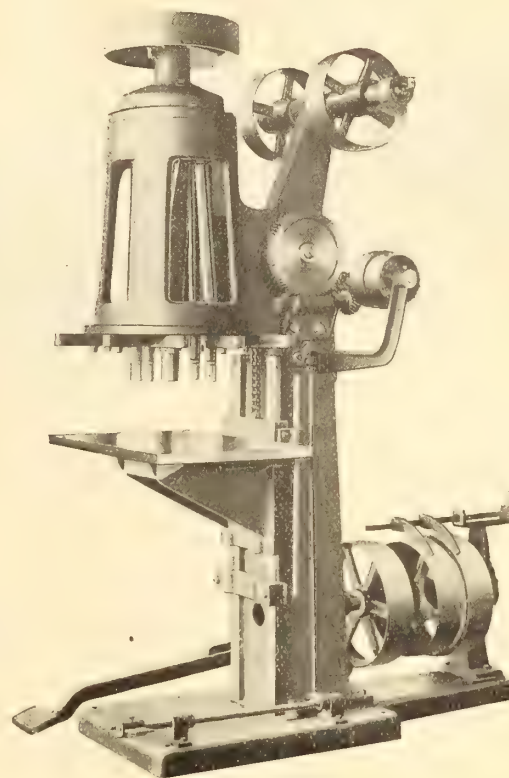
Advance Information on Building
and Engineering

The Hugh C. MacLean Co., Ltd

Publishers

Coal Review Western Canada Contractor
The Commercial Western Lumberman

Toronto, Montreal, Winnipeg,
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Root Universal Borer—Multiple Spindle

Bores 4 to 30 holes at once and just as quick as only one hole. The profit is yours—ours, the pleasure to serve.

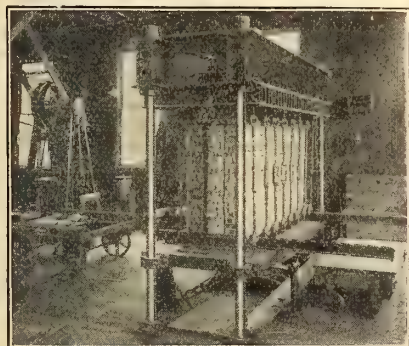
B. M. ROOT CO. YORK, Pa.

GOOD NEWS

SOME MORE FOOD FOR THOUGHT AND ACTION

In some of our advertisements we mentioned letters of praise from New Albany Veneering Co., Breece Veneer Co., Conway Veneered Door & Mantel Co., Loomis & Hart Furniture Co., and many other representative concerns.

Here are some more of the many letters received since then—one stronger than the other in praise of our Modern Hydraulic Veneer Press Equipment of Wide Open Side and Single Platen Construction with the Quick-acting Single-beam Retaining Clamps and the Quick-loading and Unloading Device.



Pearl City Veneer Co., Jamestown, N. Y., Dec. 2, 1918: "We installed a Francis Hydraulic Veneer Press Outfit in January, 1916, and put it in place of six Power Presses. Anyone acquainted with the manufacture of panels will appreciate what it means in a glue room to do away with six machines and install one in its place that will do the work much more quickly and much easier. The Press is very satisfactory. Other parties, after looking over our equipment, have bought of your concern with the same results."

Alfred Struck Co., Louisville, Ky., Dec. 3, 1918: "We cannot speak too highly of your Hydraulic Veneer Press Outfit. It saves time and cuts costs. Looking at it from the standpoint of our old Screw Presses, it is a long step forward in the manufacture of glued-up stock."

Herzog Art Furniture Co., Saginaw, W. S., Mich., Dec. 2, 1918: "The best way we can tell you what we think of your Hydraulic Veneer Press Outfit is to mail you order for another one, as we did a few days ago. We trust that is sufficient to convince you that we are satisfied with it."

Union Furniture Co., Batesville, Ind., Nov. 30, 1918: "Your Outfit gives us entire satisfaction and we only regret that we did not install it sooner than we did. The workmanship is far superior to our old way of veneering."

Wilson Furniture Co., Louisville, Ky., Dec. 2, 1918: "Your Hydraulic Veneer Press and Glue Spreader are giving perfect satisfaction, and we do not see how we could be without such labor-saving facilities."

We have many more such letters—write for them. Every one of the many users of our Hydraulic Veneer Press Outfit is enthusiastic in praise of it.

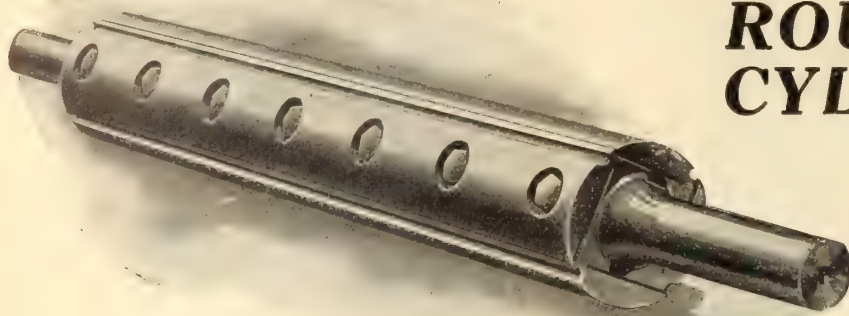
CHARLES E. FRANCIS CO.

Francis
EST. 1880.

Originators and Manufacturers
of Modern Glue Room Equipment

Factory Address: Rushville, Indiana

Francis
EST. 1880.



We are also dealers in new and rebuilt Woodworking Machinery.

PATENTED
**ROUND SAFETY
CYLINDER HEAD**

Two and four-knife heads for jointers. Round heads for moulders, top, bottom and side heads. Six-knife heads for flooring and surfacing machines. Write for particulars.

Tawney Machine Co.
WILLIAMSPORT, PA.

The Largest Table Company
In The World

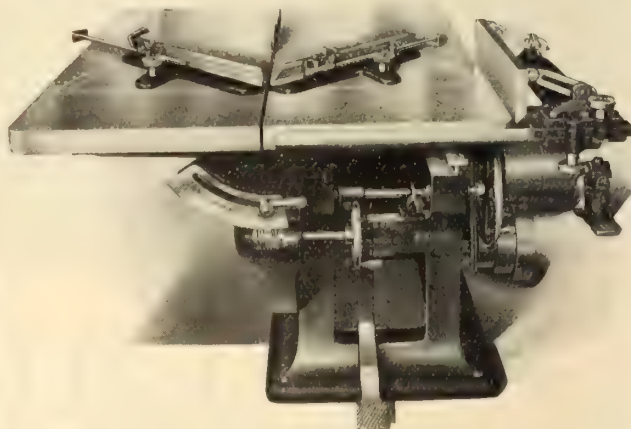
The Imperial Furniture Co.
Grand Rapids

are replacing their Dry Kilns
by a battery of up-to-date

GRAND RAPIDS VAPOR KILNS

Grand Rapids Veneer Works
Grand Rapids, Mich. Seattle, Wash.

New Model No. 171
UNIVERSAL SAW



The application of this new designed machine is almost unlimited. It can be used for ripping, cross-cutting, dadoing and other variety of work. The saw travels in gibbed ways and table tilts to 45 degrees by means of worm wheel and segment. Table is in two sections and left-hand table is adjustable for use of dado heads.

This machine will prove a paying investment in any woodworking plant.

Write for circular and prices
Hall & Brown Wood Working Machine Co.
Home Office and Factory, 1913 to 1933 N. Broadway
SAINT LOUIS, U.S.A.

We have the best facilities for the
Manufacture of

SPRING MATTRESS and CAMP COT FRAMES

also DIMENSION STOCK
in Maple, Beech and Birch

Write for prices

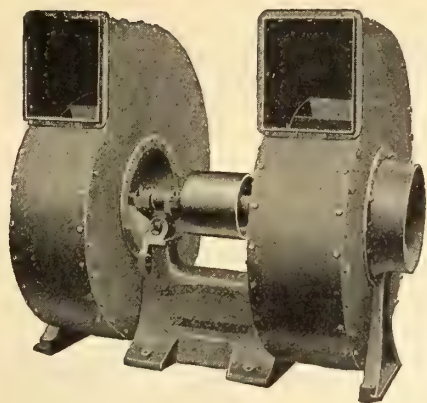
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WIARTON, ONT.

Wire, Wire Bale Ties and Wire Products

Bale ties, Heading ties, Lath ties, Hardwood Flooring ties, Wire Nails, Flat Steel or Wire Barrel hoops. All sizes of Fine Wire in Bright, Tinned or Galvanized, manufactured to order.

Laidlaw Bale-Tie Co., Ltd.

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Harry F. Moulden & Sons, Winnipeg, Man.
Head Office and Works: HAMILTON, CANADA



CANADIAN

Slow Speed Fans are designed and built right.

They will save from 15 to 25 per cent. on your power costs.

Write for a catalog

Canadian Blower & Forge

Company, Limited

KITCHENER - ONTARIO



It Takes **FEWER** Nationals
therefore

National Dry Kilns

COST LESS

Ask for Catalog

THE NATIONAL DRY KILN CO.

1117 East Maryland St., INDIANAPOLIS, Indiana

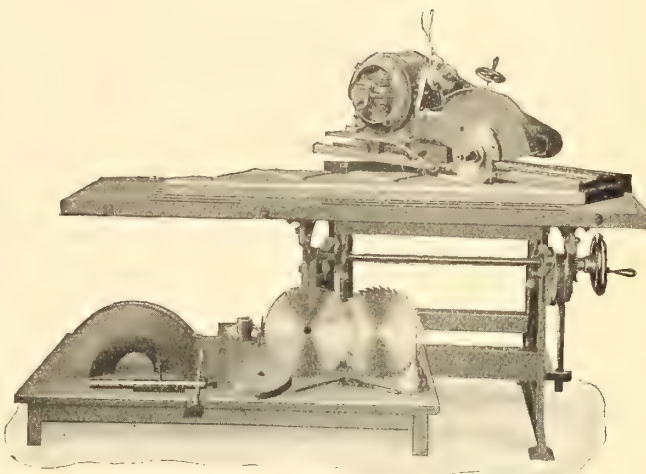
Why an

Elliot Woodworker

will save you 25% of labor and material

You can put the machine on the Job, and cut Joist, foot plumb and side cuts of Jack and Common rafters, use up cuttings for bridging, make all your drawers, cupboard doors, door and window frames, house out stair-stringers, dado, groove, miter, bore, run mouldings, in fact you have a mill on the job.

If you have no electric power or light, we can supply you with a machine to run by gasoline or other power. Write for our new literature describing it.



ELLIOT WOODWORKER. (Made in Canada)

RECOGNIZING the labor and time-saving features of the Elliot Woodworker, the Imperial Munitions Board have ordered a number of these machines.

The United States Government already have Elliot Woodworkers at Norfolk, Brooklyn, Newport News Navy Yards and the West Point Military Academy.

250 of these machines have been sold in Toronto, and the same number in Detroit alone.

This is a fine record for a Canadian machine.

Elliot Woodworker Co.,

111 ADELAIDE STREET WEST
TORONTO

PHONE ADELAIDE 2293

The Door Carrier System



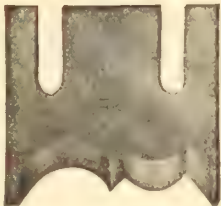
Makes your dry-kiln doors steam-tight and saves time, heat, trouble and money.

Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbeted joint, where it is held steam-tight by its own weight. Applicable to old or new kilns. Ask for catalogue.

**DRY KILN
DOOR CARRIER CO.**

1117 Cornell Ave.
INDIANAPOLIS, IND.

The Peter Hay Knife Co., Ltd.



Manufacture the Best
PLANER KNIVES
and **CUTTERS**
OF ALL DESCRIPTION

The Peter Hay Knife Co., Limited
GALT, ONTARIO

"Furniture in England"

This book is an encyclopaedia of artistic suggestion—an education in itself.

Upwards of 400 exquisite
half-tone and color plates
on pages 14 ins. x 10 ins.

Price \$12.00—Delivered to any address in Canada.
Copies may be obtained from

The Woodworker Publishing Co.
Limited

Toronto Ontario

Subscribers' Information Form

Many letters reach us from subscribers enquiring where a certain machine, a certain kind of lumber or veneer, or some other class of goods, can be obtained. We can usually supply the information. We want to be of service to our subscribers in this way, and we desire to encourage requests for such information. Make use of this form for the purpose.

CANADIAN WOODWORKER
AND FURNITURE MANUFACTURER,
345 Adelaide Street West, Toronto.

Date.....191

Please tell us where we can procure

Name

Address

Speaking of the Flexibility of Carborundum Brand Garnet Products



ONE of the strongest talking points in favor of Carborundum Brand Garnet Paper and Cloth is flexibility.

Flexibility really means durability.

A flexible Garnet paper or cloth lasts longer. There is no cracking or peeling even when worked over angles or corners.

The grains get a better chance to cut more freely, therefore the product produces more. Many years of knowing how, has built into Carborundum Brand Garnet Products that vital quality of flexibility.

It comes from painstaking effort, from a most improved method of manufacture.

Then, too, it must be remembered that every bit of paper and cloth is of the highest quality—that the Garnet grain we use is clean, pure, sharp and uniform—that the glue is of the highest grade.

Carborundum Brand Garnet Products

Will Make Good Sanders Better Sanders

THE CARBORUNDUM COMPANY, NIAGARA FALLS, N. Y.

NEW YORK CHICAGO BOSTON CLEVELAND CINCINNATI PHILADELPHIA PITTSBURGH
MILWAUKEE GRAND RAPIDS

Morehead Back to Boiler SYSTEM

**They Saved
25% in Fuel
and 50% in
Repairs**

SO WRITES Mr. Wm. H. Turner, secretary and treasurer of The Easton Furniture Company, of Easton, Md., after giving the "Morehead" system a thorough trial. Until you are draining the condensation from your kilns and returning it—every drop—to the boilers at the **original temperature**—you are wasting heat units that cost you DOLLARS to produce.

Stop That Waste!

Rejuvenate your entire steam plant by making the inexpensive "Morehead" system a part of it. Save fuel by bringing the pure condensation directly back to the boilers HOT!

Save repairs by eliminating forever the necessity for the wasteful and constantly out-of-order steam pump. The simple, easily installed "Morehead" system will much more than pay for itself the first year of use.

Write for the proof to-day.

The "Morehead" book shows actual photographs of some interesting installations. Don't you want your copy at once?

Canadian Morehead Mfg. Co.

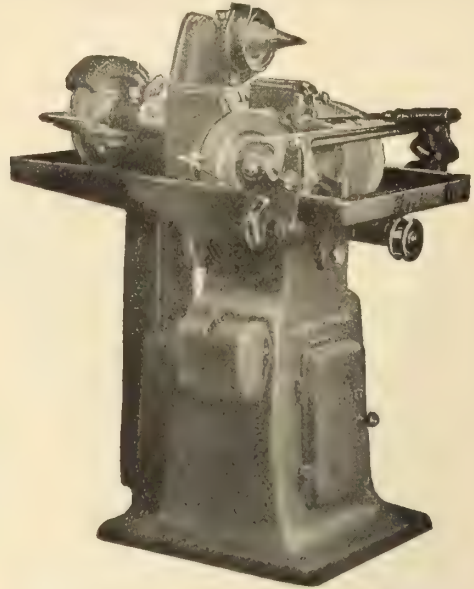
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Woodstock - Ontario

417

Mummert-Dixon Oilstone Grinders

THE MODERN EDGE TOOL SHARPENING MACHINE
THE STANDARD FOR ALL WOOD-WORKING SHOPS



No. 481 MOTOR OR COUNTERSHAFT DRIVE
An automatic attachment for grinding long knives can be furnished with this machine.

THE FIVE LEADING FEATURES

1. Coarse Oilstone Wheel. 2. Fine Oilstone Wheel.
3. Grinding Cone. 4. Leather Wheel. 5. Emery Wheel.

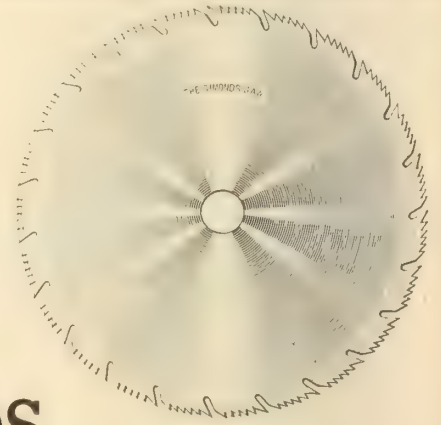
ALL AT YOUR FINGERS ENDS

Send for full descriptive bulletin.

MUMMERT-DIXON COMPANY

220 S Philadelphia St.

HANOVER, PA.



SIMONDS SAWS AND KNIVES

The woodworkers' friend. They are satisfactory and guarantee the best results. Made of Simonds Special Crucible Steel, they are evenly tempered, uniform in construction and have the cutting qualities.

We make all kinds of Saws and Knives for either wood or metal cutting.

SIMONDS CANADA SAW CO., Limited

St. Remi Street and Acorn Ave.,

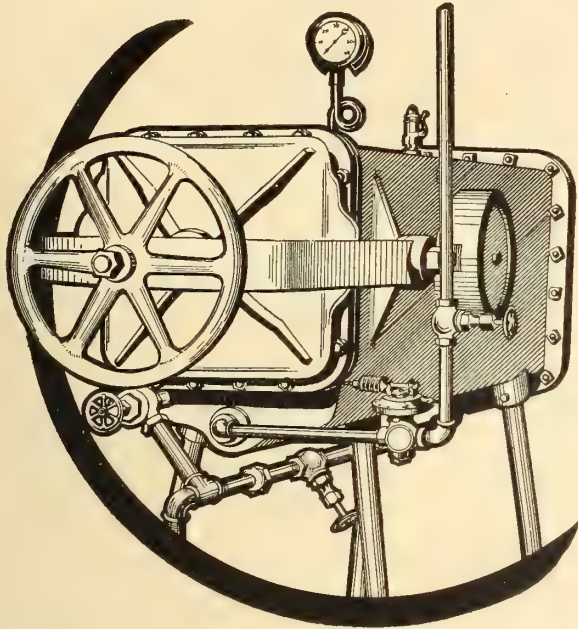
VANCOUVER, B.C.

MONTREAL, Que.

ST. JOHN, N.B.



Wood Steaming Retort



Wood Bending Manufacturers:

This is one of our

Perfection Retorts

which we guarantee will save you

50% Less Breakage

in your bending department than your present process; that your stock will dry in your forms or presses in one-third less time; that you will have no stained stock; that your stock will retain its shape much better after being bent; that it will dry in your dry-kiln in one-half less time and that your steam consumption will be reduced at least 90 per cent.

The door can be opened and closed in ten seconds, and it is steam and water tight and for this reason can be placed anywhere in your factory.

Compare this IMPROVED RETORT with your present steam boxes, then write us for our Booklet on Progressive Wood Steaming.

Made in Preston, Ontario

Perfection Wood Steaming Retort Co.

PARKERSBURG - WEST VIRGINIA

1 Quart Size



To Remedy Those Glue Room Troubles

Use the INTERNATIONAL ELECTRIC GLUE HEATER

The proper mixing and density of the glue is made very simple with the use of the International Electric Glue Heater, without risk of fire and free from all the unnecessary uncleanness of this work. They operate from any lighting circuit with perfect results assured. The use of International Electric Glue Heaters will save you time, labor and money. An up-to-date heater far superior to the old-fashioned glue pot.

INTERNATIONAL ELECTRIC COMPANY
MANUFACTURERS
ELECTRICAL HEATING APPLIANCES

INDIANAPOLIS, U.S.A.

Canadian Distributors

R. E. T. PRINGLE, Limited

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WINNIPEG
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401 New Birks Bldg.
VANCOUVER
402 Vancouver Block



Write To-day
for
our Booklet

"Economy
in the
Glue Room"

4-Quart Size

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Shimer Cutter Head Co., Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CYLINDER HEADS

Cowan & Company, Galt, Ont.
Tawney Machine Co., Williamsport, Pa.

DIMENSION STOCK

Newman Sons, John P., Warton, Ont.

DOOR CARRIERS FOR DRY KILNS

Dry Kiln Door Carrier Co., Indianapolis, Ind.

DOVETAILING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.

DOWEL MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Dauber-Bell Machine Co., Oshkosh, Wis.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Hawker Mfg. Co., W. S., Dayton, Ohio.

DOWELS

Canada Wood Specialty Co., Ltd., Orillia, Ont.

DRY KILNS

Canadian Blower & Forge Co., Kitchener, Ont.
Grand Rapids Veneer Works, Grand Rapids, Mich.
National Dry Kiln Co., Indianapolis, Ind.
Sheldons, Limited, Galt, Ont.

DUST COLLECTORS

Canadian Blower & Forge Co., Kitchener, Ont.
Sheldons, Limited, Galt, Ont.
Toronto Blower Company, Toronto, Ont.

DUST SEPARATORS

Canadian Blower & Forge Co., Kitchener, Ont.
Sheldons, Limited, Galt, Ont.
Toronto Blower Company, Toronto, Ont.

EDGERS (Single Saw)

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

EDGERS (Gang)

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

END MATCHING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

EXHAUST FANS

Canadian Blower & Forge Co., Kitchener, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Sheldons, Limited, Galt, Ont.
Toronto Blower Company, Toronto, Ont.

FEED ATTACHMENTS

Garlock-Walker Machinery Co., Toronto, Ont.

FLOORING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

FLUTING HEADS

Fay & Egan Co., J. A., Cincinnati, Ohio.

FURNITURE CARVINGS

Decorators Supply Co., Chicago, Ill.

FURNITURE LEATHER

Eagle-Ottawa Leather Co., Grand Haven, Mich.

FURNITURE TRIMMINGS

Faultless Caster Co., Evansville, Ind.
Foster, Merriam Co., Meriden, Conn.
Weber, Knapp Co., Jamestown, N.Y.

GARNET PAPER AND CLOTH

Carborundum Co., Niagara Falls, N.Y.

GRAINING MACHINES

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDING WHEELS

Carborundum Co., Niagara Falls, N.Y.

GLUE

Bury & Co., Robt., Toronto, Ont.
Canada Glue Company, Brantford, Ont.
Certs Cold Glue Co., Detroit, Mich.
Kane Manufacturing Co., Chicago, Ill.
Perkins Glue Company, South Bend, Ind.

GLUE CLAMPS

Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Neilson & Company, J. L., Winnipeg.

GLUE HEATERS

Fay & Egan Co., J. A., Cincinnati, Ohio.
International Electric Co., Indianapolis, Ind.
Jackson, Cochrane & Company, Kitchener, Ont.
Pringle, R. E. T., Toronto, Ont.

GLUE JOINTERS

Canada Machinery Corporation, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

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Canadian White Pine

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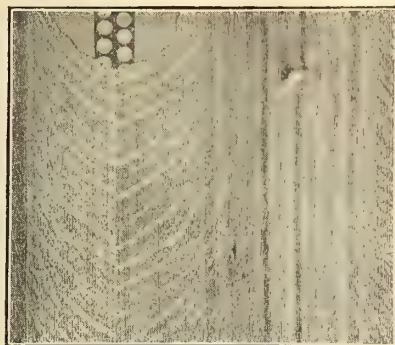
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150 M. 4/4 Maple, No. 2 Com. and Btr.
100 M. 4/4 Birch, No. 2 Com. and Btr.
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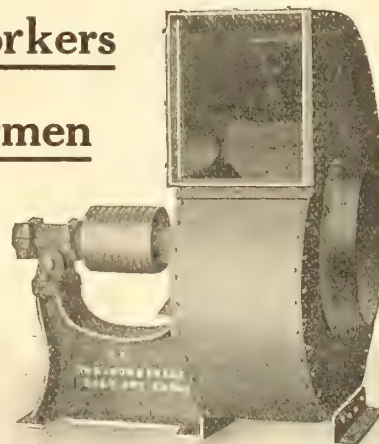
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Messrs. Robt. Hamilton & Co., Ltd., Bk. of Ottawa Bldg, Vancouver, B.C.

"Canadian Woodworker" Buyers' Directory—Continued

GLUE SPREADERS

Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GLUE ROOM EQUIPMENT

Perrin & Company, W. R., Toronto, Ont.

GLUING MACHINES

Francis & Co., Chas. E., Rushville, Ind.

GRINDERS (Cutter)

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.

GRINDERS (Knife)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GRINDING WHEELS

Carborundum Co., Niagara Falls, N.Y.

GROOVING HEADS

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.

GUM LUMBER

Aberdeen Lumber Co., Pittsburg, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
Anderson-Tully Co., Memphis, Tenn.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bellgrade Lumber Co., Memphis, Tenn.
Brown & Co., George C., Memphis, Tenn.
Churchill-Milton Lumber Co., Louisville, Ky. . .
Cornelius Lumber Co., St. Louis, Mo.
Gum Lumber Association, Memphis, Tenn.
Heyser Lumber Co., W. E., Cincinnati, Ohio.
Holly Ridge Lumber Co., Louisville, Ky.
Paepcke-Leicht Lumber Co., Chicago, Ill.
Probst Lumber Co., Cincinnati, Ohio.
Thomas & Proetz Lumber Co., St. Louis, Mo.
Wisconsin Lumber Co., Chicago, Ill.

HAND SCREWS

Fay & Egan Co., J. A., Cincinnati, Ohio.

HANDLE & SPOKE MACHINERY

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Whitney & Son, Baxter D., Winchendon, Mass.

HARDWARE

Laidlaw Bale-Tie Co., Hamilton, Ont.
Weber, Knapp Co., Jamestown, N.Y.

HARDWOOD LUMBER

Aberdeen Lumber Co., Pittsburgh, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
American Oak Mfrs. Assn., Memphis, Tenn.
American Walnut Association, Washington D.C.
Anderson-Tully Co., Memphis, Tenn.
Atlantic Lumber Company, Toronto, Ont.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bellgrade Lumber Co., Memphis, Tenn.
Bonner & Sons, J. H., Memphis, Tenn.
Brown & Company, Geo. C., Memphis, Tenn.
Burns & Knapp Lumber Co., Conneautville, Pa.
Bury & Company, Robert, Toronto, Ont.
Cornelius Lumber Co., St. Louis, Mo.
Canadian General Lumber Co., Toronto, Ont.
Churchill-Milton Lumber Co., Louisville, Ky.
Darby Hardwood Lumber Co., Memphis, Tenn.
Dooley Lumber Co., F. F., Memphis, Tenn.
Elgie & Jarvis Lumber Co., Toronto, Ont.
Evansville Band Mill Co., Evansville, Ind.
Gayoso Lumber Co., Memphis, Tenn.
Hart & McDonagh, Toronto, Ont.
Heyser Lumber Co., W. E., Cincinnati, Ohio.
Holly Ridge Lumber Co., Louisville, Ky.
Hunt, Wellington & Smith, Nashville, Tenn.
Kersley, Geo., Montreal, Que.
Korn-Conkling Co., Cincinnati, Ohio.
Lawrence & Co., P. J., St. Louis, Mo.
Long-Knight Mfg. Co., Indianapolis, Ind.
Maley & Wertz, Evansville, Ind.
McLennan Lumber Co., Montreal, Que.
Memphis Band Mill Co., Memphis, Tenn.
Mowbray & Robinson, Cincinnati, Ohio.

Paepcke Leicht Lumber Co., Chicago, Ill.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City.
Percy E. Heeney, Kitchener, Ont.
Pickrel Walnut Co., St. Louis, Mo.
Probst Lumber Co., Cincinnati, Ohio.
Shafer Hardwood Co., John I., South Bend, Ind.
Spencer, C. A., Montreal, Que.
Stark & Co., Jas. E., Memphis, Tenn.
Stimpson & Co., J. V., Owensboro, N. Y.
Wisconsin Lumber Co., Chicago, Ill.

HYDRAULIC VENEER PRESSES

Perrin & Company, Wm. R., Toronto, Ont.

JOINTERS

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

LATHES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.

MACHINE KNIVES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

METALINE NAILS

Dominion Tack & Nail Co., Galt, Ont.

MITRE SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

MOULDERS

Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Vonnegut Machinery Co., Indianapolis, Ind.

MULTIPLE BORING MACHINES

Root Company, B. M., York, Pa.

MULTIPLE BOXING MACHINES

Fay & Egan Co., J. A., Cincinnati, Ohio.
Nash, J. M., Milwaukee, Wis.

OIL STONE GRINDERS

Mummert-Dixon Co., Hanover, Pa.

PANELS

Hay & Co., Limited, Woodstock, Ont.
Waetjen & Co., George L., Milwaukee, Wis.

PATTERN SHOP MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

PERIOD TURNINGS

Walter & Sons, J., Kitchener, Ont.

PLANERS

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

PLANING MILL MACHINERY

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PRESSES (Veneer)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Co., Wm. R., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

PULLEYS

Bernard Industrial Co., A., Fortierville, Que.

RESAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RIM AND FELLOE MACHINERY

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.

RIP SAWING MACHINES

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RUBBING MACHINES

DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.
Paasche Air Brush Co., Chicago, Ill.

SAFETY DEVICES

Cowan & Company, Galt, Ont.

SANDERS

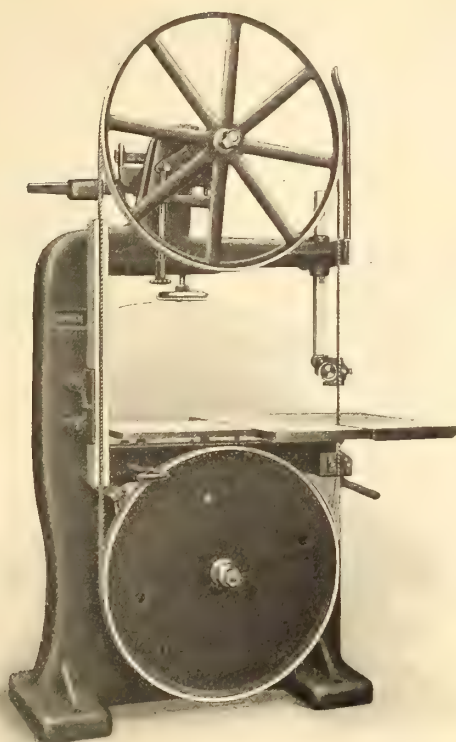
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

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SASH, DOOR & BLIND MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAWS

Atkins & Co., E. C., Indianapolis, Ind.
Radcliff Saw Mfg. Company, Toronto, Ont.
Shurly-Dietrich, Ltd., Galt, Ont.
Simonds Canada Saw Co., Montreal, Que.

SAW SWAGES

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.

SAW TABLES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SCRAPING MACHINES

Canada Machinery Corporation, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.

SCREW DRIVING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Reynolds Machine Co., Massillon, Ohio.

SCROLL SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SECOND-HAND MACHINERY

Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

SHAPERS

American Woodworking Machinery Company, Rochester, N.Y.
Cowan & Company, Galt, Ont.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS

Canadian Blower & Forge Co., Kitchener, Ont.
Sheldons Limited, Galt, Ont.
Toronto Blower Company, Toronto, Ont.

SHOOK BUNDLER

Neilson & Company, J. L., Winnipeg, Man.

SPRING MATTRESS FRAMES

Newman Sons, J. P., Warton, Ont.

SPRINGS FOR UPHOLSTERY

Weber, Knapp Co., Jamestown, N.Y.

STAINS

Ault & Wiborg, Toronto, Ont.
Marietta Paint & Color Co., Marietta, Ohio.

SINGLE SPINDLE BOXING MACHINES

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.

STAVE SAWING MACHINE

Whitney & Son, Baxter D., Winchendon, Mass.

SURFACERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES

Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES

Walter & Company, B., Wabash, Ind.

TACKS AND NAILS

Canada Tack & Nail Co., Hamilton, Ont.
Dominion Tack & Nail Co., Galt, Ont.

TEMPERATURE REGULATORS

Canadian Powers Regulator Co., Toronto, Ont.

TENONING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TIME CLOCKS

International Business Machines Co., Toronto, Ont.

TRIMMERS

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRUCKS

Sheldons Limited, Galt, Ont.
National Dry Kiln Co., Indianapolis, Ind.

UPHOLSTERER'S FLOCK AND BATTING

Bauers Limited, Waterloo, Ont.

VARNISHES

Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg Company, Toronto, Ont.
Jamestown Wood Finishing Co., Jamestown, N.Y.
Penfound Varnish Co., Toronto, Ont.

VARNISH SPRAYERS

DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

VENEERS

Bury & Company, Robert, Toronto, Ont.
Central Lumber Co., Indianapolis, Ind.
Christman Veneer & Lumber Co., St. Louis, Mo.
Dean Spicker Company, Chicago, Ill.
Empire Veneer Company, Chicago, Ill.
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Geo. Kersley, Montreal, Que.
Korn Conkling Co., Memphis, Tenn.
Long-Knight Lumber Co., Indianapolis, Ind.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Nartzik, J. J., Chicago, Ill.
National Veneer & Lumber Co., Indianapolis, Ind.
North Vernon Lumber Co., North Vernon, Ind.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Roberts & Co., John N., New Albany, Ind.
Southern Veneer Mfg. Co., Louisville, Ky.
Thompson Veneer Co., W. T., Edinburgh, Ind.
Toronto Veneer Company, Toronto, Ont.
Veneer Manufacturers Co., Chicago, Ill.
Waetjen & Co., George L., Milwaukee, Wis.

VENEER TAPE

Ideal Coated Paper Co., Brookfield, Mass.

VENTILATING APPARATUS

Canadian Blower & Forge Co., Kitchener, Ont.
Sheldons Limited, Galt, Ont.

VENEER JOINTERS

Garlock-Walker Machinery Co., Toronto, Ont.

VENEER MACHINERY

Garlock-Walker Machinery Co., Toronto, Ont.

VENEER PRESSES (Hand and Power)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Company, Wm. R., Toronto, Ont.

VICES

Fay & Egan Co., J. A., Cincinnati, Ohio.

WOOD FINISHES

Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg, Toronto, Ont.
Jamestown Wood Finishing Co., Jamestown, N.J.
Penfound Varnish Co., Toronto, Ont.

WOOD SCREWS

Robertson Mfg. Co., P. L., Milton, Ont.

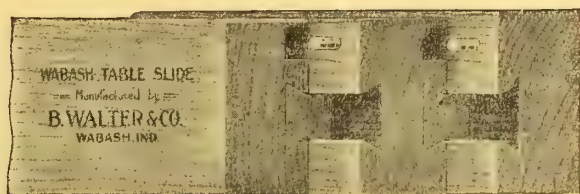
WOOD TURNING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Mattison Machine Works, Rockford, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES

Fay & Egan Co., J. A., Cincinnati, Ohio.

THE SLIDE IS THE HEART OF YOUR EXTENSION TABLE



*If the Slide Does Not Work Properly
Your Whole Table is Condemned*

**Wabash Slides insure
Satisfied Customers**

SLIDE MAKING is a SPECIALTY BUSINESS

We can Furnish Better Slides for Less Cost

**Eliminate Slide Troubles by using
WABASH SLIDES**

MADE BY

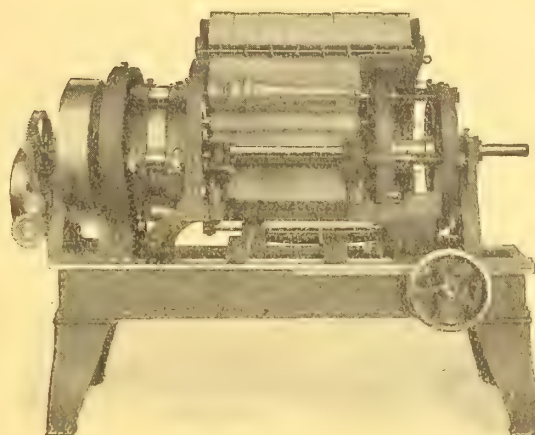
B. Walter & Company

Edsall St., Wabash, Ind.

Canadian Representative:

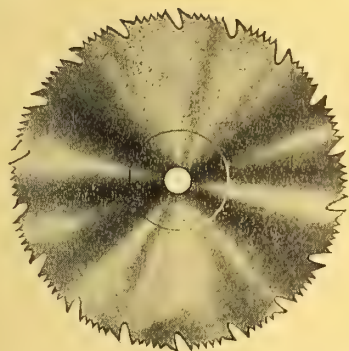
A. B. CAYA, 28 King St. East, Kitchener, Ont.

USE Machines for Mechanical Power Men for Brain-Power



Why employ expensive labor to do what the
Nash Sander can do much better and cheaper.
Save the labor waste and watch your profits
grow.

J. M. NASH, Milwaukee, Wis.



ATKINS

STERLING QUALITY

SAWS and KNIVES

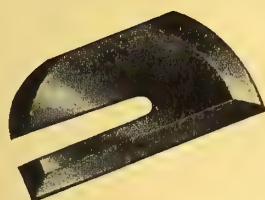
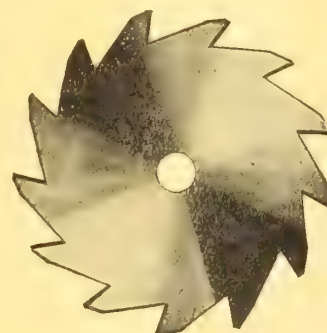
The best steel—the most careful and
accurate workmanship—the equipment
that will eventually save you money.

Atkins Sterling Quality Saws and Knives
are proving their superiority by competi-
tive tests in the largest plants of the
country. We welcome your most care-
ful investigation, as we know the satis-
faction that will result.

Write to-day for our Knife Booklet "CW"
and Pattern Template Paper.

E. C. ATKINS & CO.

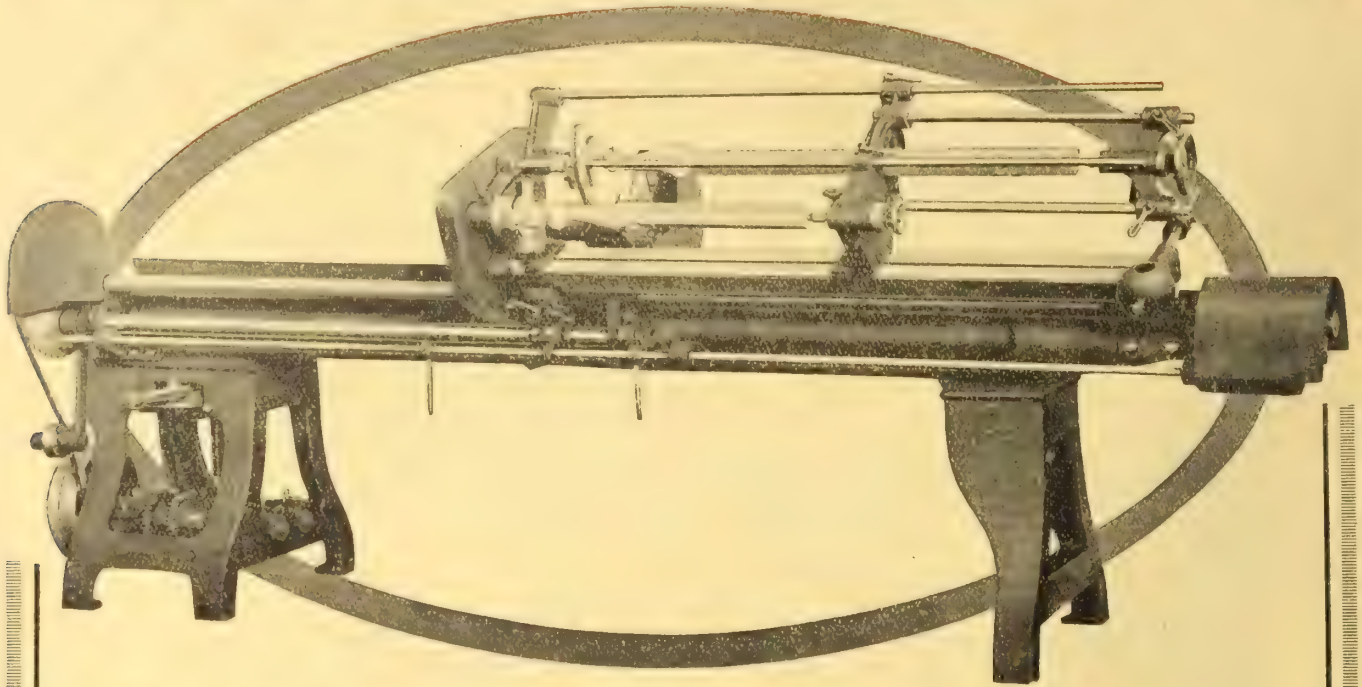
Makers of Sterling Saws



Factory—HAMILTON, Ont.

Vancouver Branch—109 Powell Street

For Shaping and Sanding Your Cabriole Legs



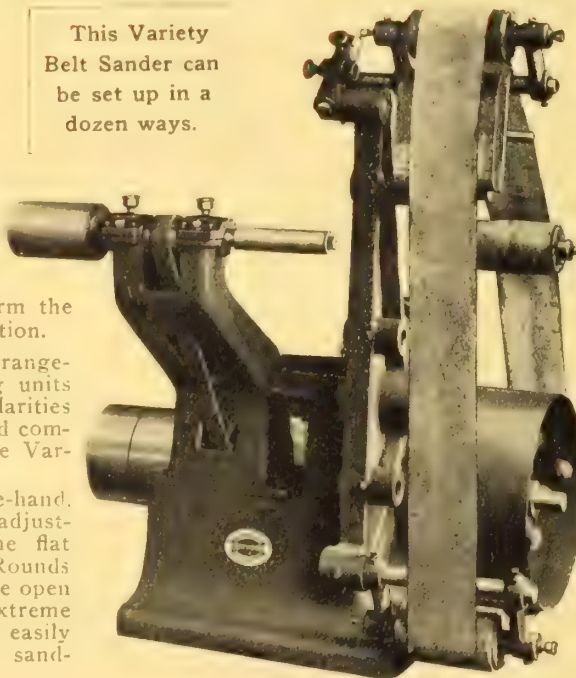
Use the Mattison Forming Lathe and Variety Sander

THE Mattison Automatic Leg-Forming Lathe will turn chair and table legs, dresser and chiffonier posts—in fact, practically any design of Cabriole Leg—twice as fast and at one-half the cost of any other method. It does its work automatically—the operator places the blank in the work supports and the cutters form the leg accurately in one operation.

Because of the compact arrangement of its various sanding units the many curves and irregularities of a Cabriole Leg are finished complete in one handling on the Variety Sander.

The leg is manipulated free-hand, against sanding rolls or the adjustable form, for finishing the flat curves and square faces. Rounds are applied against the flexible open belt or spindles. The extreme curves of the foot part are easily reached on the cushioned sand-covered spindles.

This Variety Belt Sander can be set up in a dozen ways.



BY having the Leg-Forming Lathe and the Variety Belt Sander set in combination, it is possible for one operator to take care of both machines.

Where it is impractical to have both machines set together, you can minimize labor costs and double production by having one man operate two of the lathes.

Whatever arrangement best suits your factory plan, you will find this Mattison Method—shaping the legs on the forming lathe and finishing them on the variety belt sander—the most satisfactory. It is economical. It is wholly efficient.

Send for Illustrated Bulletins Describing This Method

MATTISON MACHINE WORKS

Formerly at Beloit, Wisconsin

NOW AT

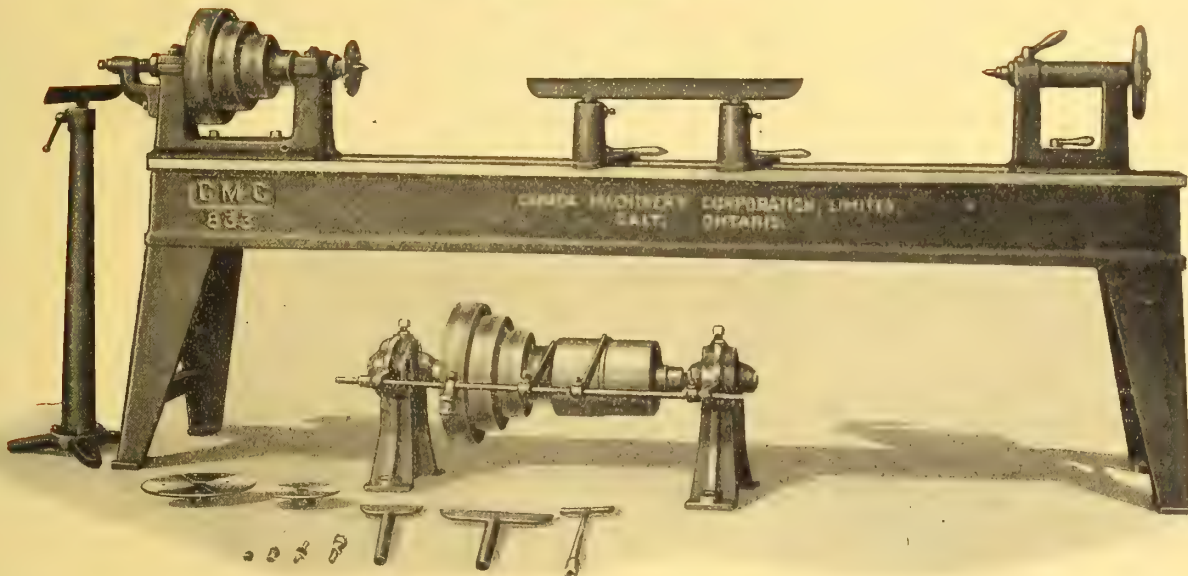
ROCKFORD, ILLINOIS, U. S. A.

CANADIAN WOODWORKER *and* Furniture Manufacturer

Trade Mark



Registered



No. 833 Wood Lathe on Iron Bed

Designed for use in training schools, pattern shops and manufacturing plants where a simple rigid lathe is required, these lathes will be found to be a decided improvement over machines mounted on a wooden bed.

Made in sizes from 12" to 24", single or double end.

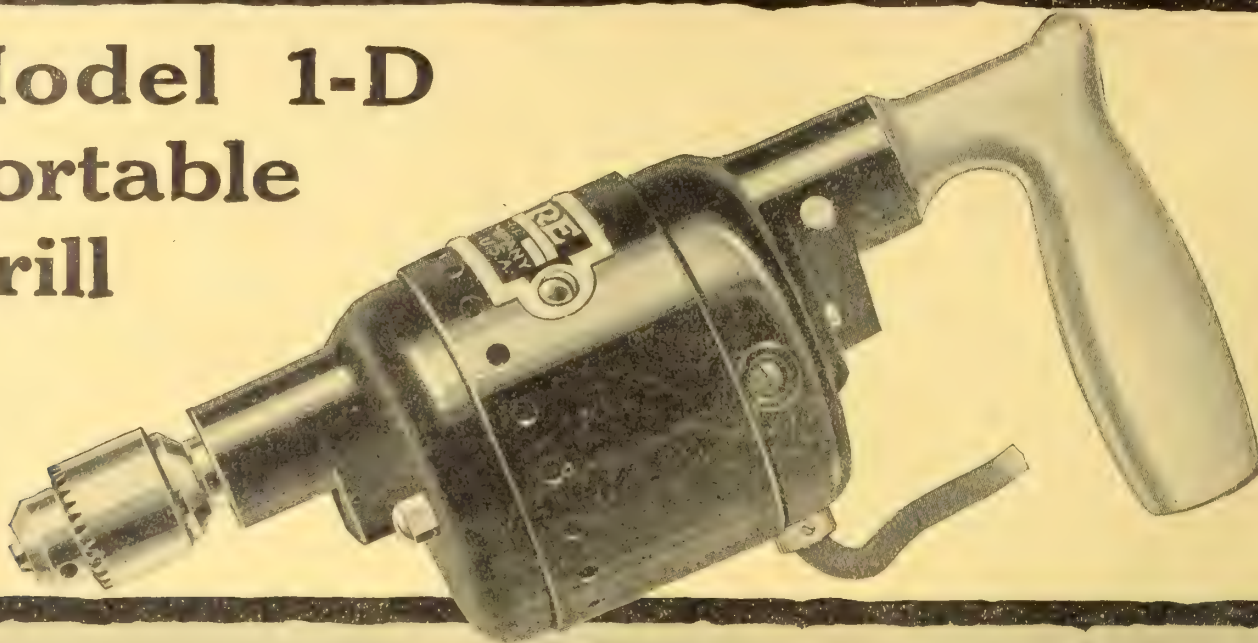
Write for our Special Descriptive Bulletin

CANADA MACHINERY CORPORATION, LIMITED, GALT, ONTARIO

Toronto Office and Warerooms

Brock Avenue Subway

Model 1-D Portable Drill



HANDY—ECONOMICAL—EFFICIENT

Specifications:

Length—10 inches.

Weight—4 $\frac{3}{4}$ pounds.

Capacity—Steel, 0 to $\frac{3}{16}$ " Wood and alloys, 0 to $\frac{1}{4}$ ".

Motor—Universal, on either direct or alternating current.

Diameter of Motor—3 $\frac{3}{8}$ inches.

Spindle—Offset from center $\frac{1}{8}$ ".

Helical Gears.

Aluminum Handle.

Complete with 10-ft. cord, plug, switch and chuck.

Jacob's Chucks used as a regular equipment.

FOR speed in drilling and counter-sinking small holes, this tool is just what you need. It can be used on any kind of material—steel, iron, brass, aluminum or wood—and gives lasting service.

If your dealer cannot supply you with the Model 1-D, tell us about your requirements.

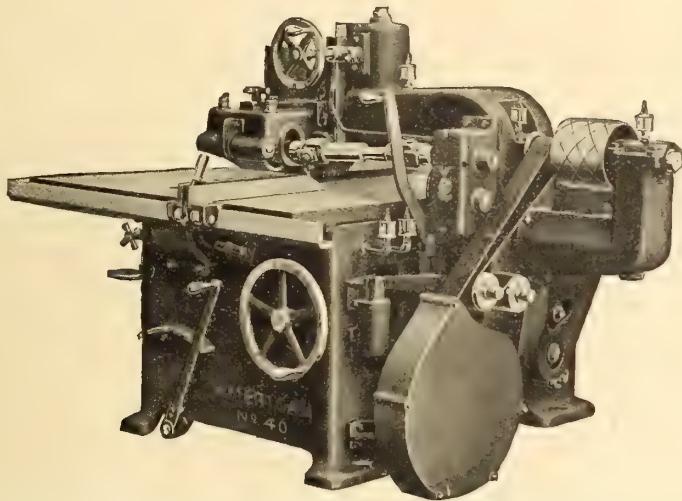
Wisconsin Electric Company
7111 Sixteenth Street, Racine, Wisconsin, U. S. A.

DUMORE GEARED ELECTRIC DRILLS

A Page from Our Catalog

AMERICAN WOOD WORKING MACHINERY COMPANY

American No. 40 Chain-Feed Edging Saw

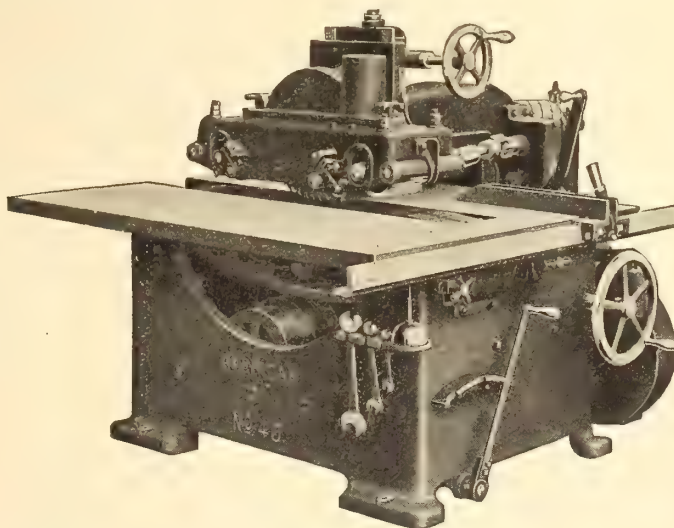


THIS is an extremely rigid and well-designed machine for accurately edging crooked and uneven stock and cutting out checks and imperfections. It will edge lumber straight any length without the use of the guide. It will effect a great saving in time and labor in such work as core stock, caskets and

the cheaper grades of furniture, for in all such work the stock is ready to glue up as soon as it comes from the machine. It will rip to widths, leaving the edges perfectly straight, at a rate equal to the output of two or three hand-fed saws. All the adjustments are in sight and are made from the front of the machine.

Capacity

Will rip stock as short as 8-in. and to 24-in. wide. Distance from saw to left hand of table 24-in. Largest diameter of saw used 14-in.; smallest, 10-in. A 14-in. saw will rip stock 4-in. thick and under. A 12-in. saw is furnished with the machine. Hole in saw $1\frac{5}{8}$ -in. with $\frac{5}{8}$ -in. dowel pin, 1 3-16-in. from center of saw to center of pin.



CANADIAN SALES AGENTS

Garlock-Walker Machinery Company

Limited

32 Front Street West, TORONTO, ONT.

Toronto

Montreal

Winnipeg

NEW YORK

ROCHESTER

CHICAGO

NEW ORLEANS

SAN FRANCISCO

PORTLAND ORE.

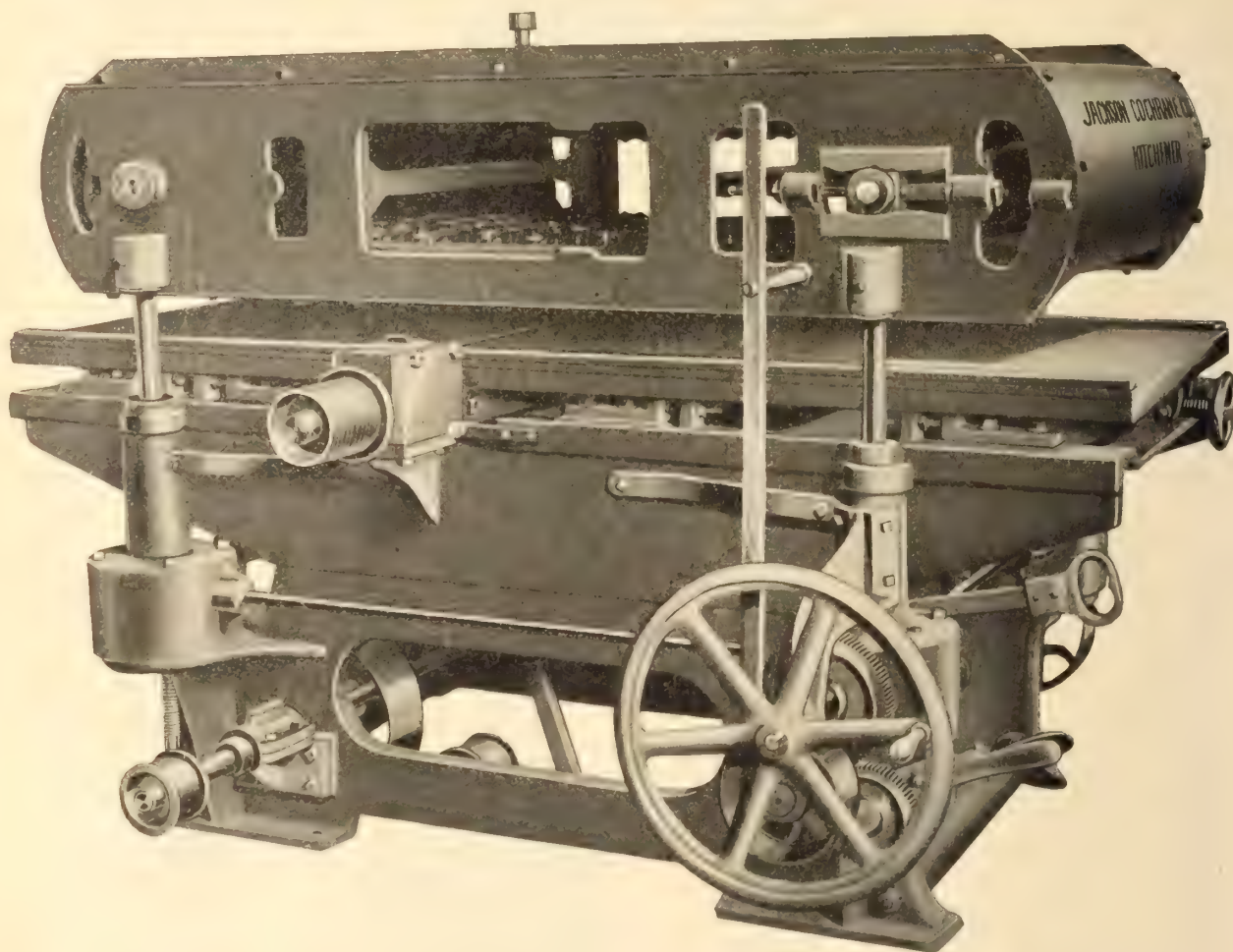
The Herzog Self-Feed Jointer

means

Increased Production
Small Floor Space

Simplicity of Operation
Safety to Employees

Does Four Times the Work of the Hand Jointer

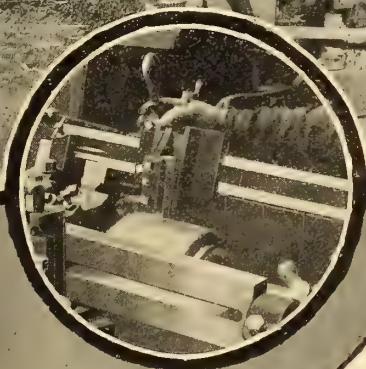
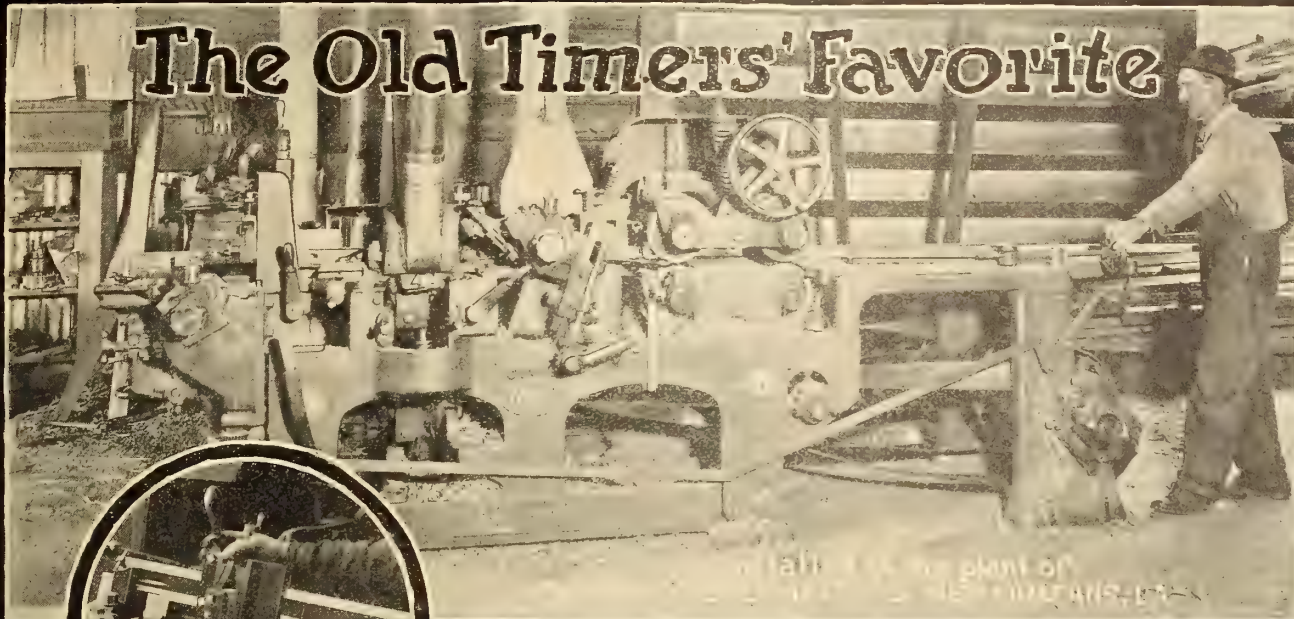


Our No. 34 Herzog Jointer, illustrated above, is one of the most efficient machines on the market to-day. It is appreciated by the manufacturer and employees alike, because, while it will produce from three to five times as much work as the hand jointer, it does not require skilled operators, but eliminates the danger so common to other makes. It can be operated by two boys. It will handle stock varying in width from 1 inch to the full width of the jointer, will feed fast or slow, takes only one-fourth the floor space of hand jointers, and requires only one-fifth of the sharpening of the knives. It is fitted with power feed raising and lowering attachment, with cylinder double belted and driven from both ends.

If interested in reducing your costs, write us.

Jackson, Cochrane & Company
KITCHENER - CANADA

The Old Timers' Favorite



Yates No. 108 Moulder

THE popularity of this machine is shown by the fact that one or more "108s" are to be found in over 1,500 mills and factories in North America.

It is the favorite of practical men whose experience enable them to compare the accessibility and sturdiness of the No. 108 with other machines designed for the same purpose.

This machine combines the sturdiness of an inside moulder with the accessibility of an outside moulder. All adjustments are placed in the most convenient positions. The jointing devices, one of which is shown above, make a fine finish possible by keeping the knives sharp and each doing its share.

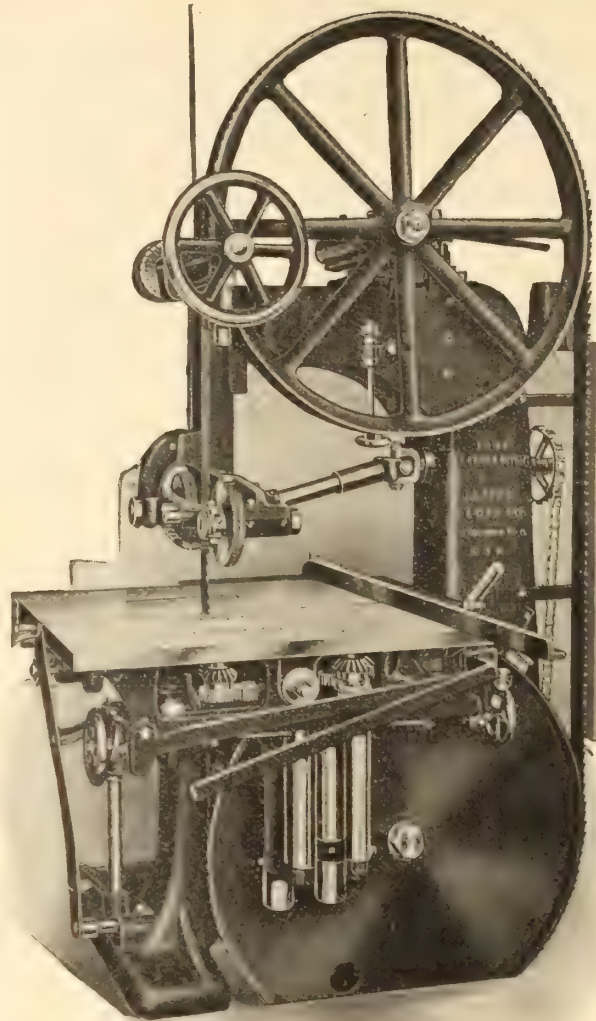
Our new eight-page illustrated circular on the No. 108 will be sent free on request.
Write for it to-day.

**"The
Invariable
Choice
of the
Man
Who
Knows"**



P. B. Yates Machine Co. Ltd.

HAMILTON, ONT. CANADA
U.S. PLANT—BELOIT, WIS.



Ready in a Moment to Either Rip or Resaw

If your combined ripping and resawing does not exceed 50 to 60 M lineal feet per day on soft woods, or 20 to 25 M feet on hard woods, you do not need to put in two separate machines.

A Fay-Egan No. 146 will take care of all this work in the most economical manner.

At the very beginning you save the price of one machine.

You save the space occupied by one machine.

You realize the highest return on your investment, as the one machine is kept busy all the time.

By simply reversing the table and raising or lowering the ripping rolls, the No. 146 is changed from a rip to a resaw or from a resaw to a rip saw—it takes but a moment to do this.

As a rip saw, it will handle material up to 24 inches wide.

As a resaw, it will cut to the center of 8 inches and up to 18 inches under the guide.

The No. 146 has all of the advantages of a separate band rip or resaw.

You can find out more about this economical machine by asking for Bulletin N-3

J. A. FAY & EGAN CO.

153-163 W. Front St.

CINCINNATI, O.

The "Shimer Limited" Expansion Head

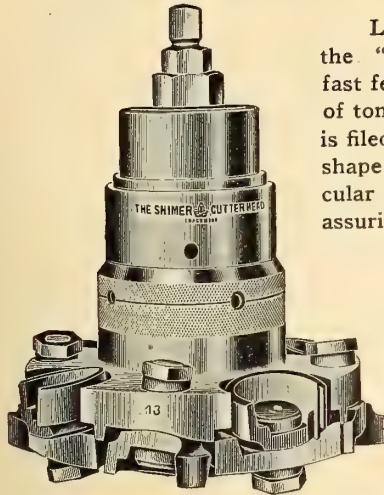


Fig. 627

Let us draw your attention to the advantages of using the "SHIMER CUTTER HEAD" for general Mill and fast feed Planer work. The Cutter is turned to cut the shape of tongue and groove desired, so that to sharpen the cutter it is filed or ground on its face, guaranteeing the user the same shape of cut during the life of the cutter. The bit being circular has from $3\frac{1}{2}$ in. to 5 in. cutting length to the cutter, assuring long wearing life to the cutters.

Note that the cutter, being fastened to a concave seat on a compound angle, assures the user of the proper clearance of cutters, consequently they never burn.

These heads are fitted with or without the Self-Centering Sleeve, and made Expansion or Solid, to suit the customer's wishes.

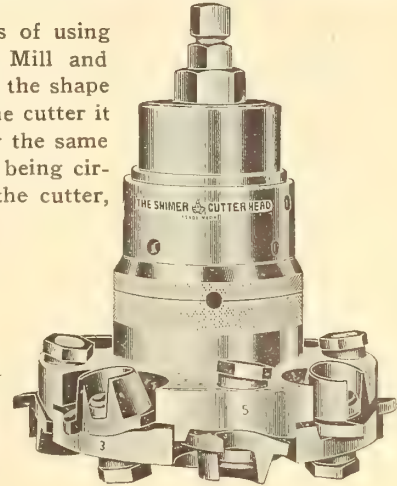


Fig. 268

Shimer Heads have been in use for sixty years, and their reliability and reputation have spoken for them in the past. Let us know your wants and we will guarantee their reliability at the present.

SHIMER CUTTER HEAD CO. OF CANADA, LIMITED

Successors to Samuel J. Shimer & Sons, Inc.

GALT, ONTARIO

Radcliff "Beaver" Brand Circular Saws Stand the Test of Time as the Following Letter Proves:---

Lucknow, R. R. No. 2,
March 1st, 1919

The Radcliff Saw Manufacturing Co., Ltd.,
Toronto.

Gentlemen,—

Some time ago we had the misfortune to bend one of our circular saws. It is one we got from you about five years ago, and it gave the very best satisfaction till it was bent.

We are expressing it to you for repair.

Yours sincerely,

Thomas Phillips.

This saw was originally 58" solid tooth rip. After 5 years steady work it is reduced to 55" and has never been hampered once.

We have numbers of such gratifying letters from our customers which goes to prove that good steel and careful workmanship only can produce satisfied customers.

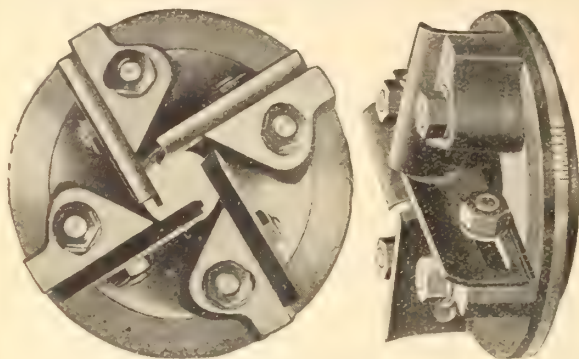
Try us out with your next order.

Radcliff Saw Manufacturing Company, Limited

Cable Address :
"RADSAW, TORONTO"

1550 Dundas Street St. West, TORONTO

Agents for L. & I. J. White Company Machine Knives

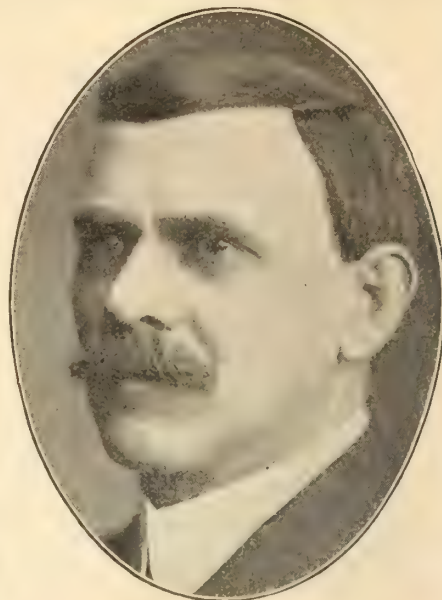
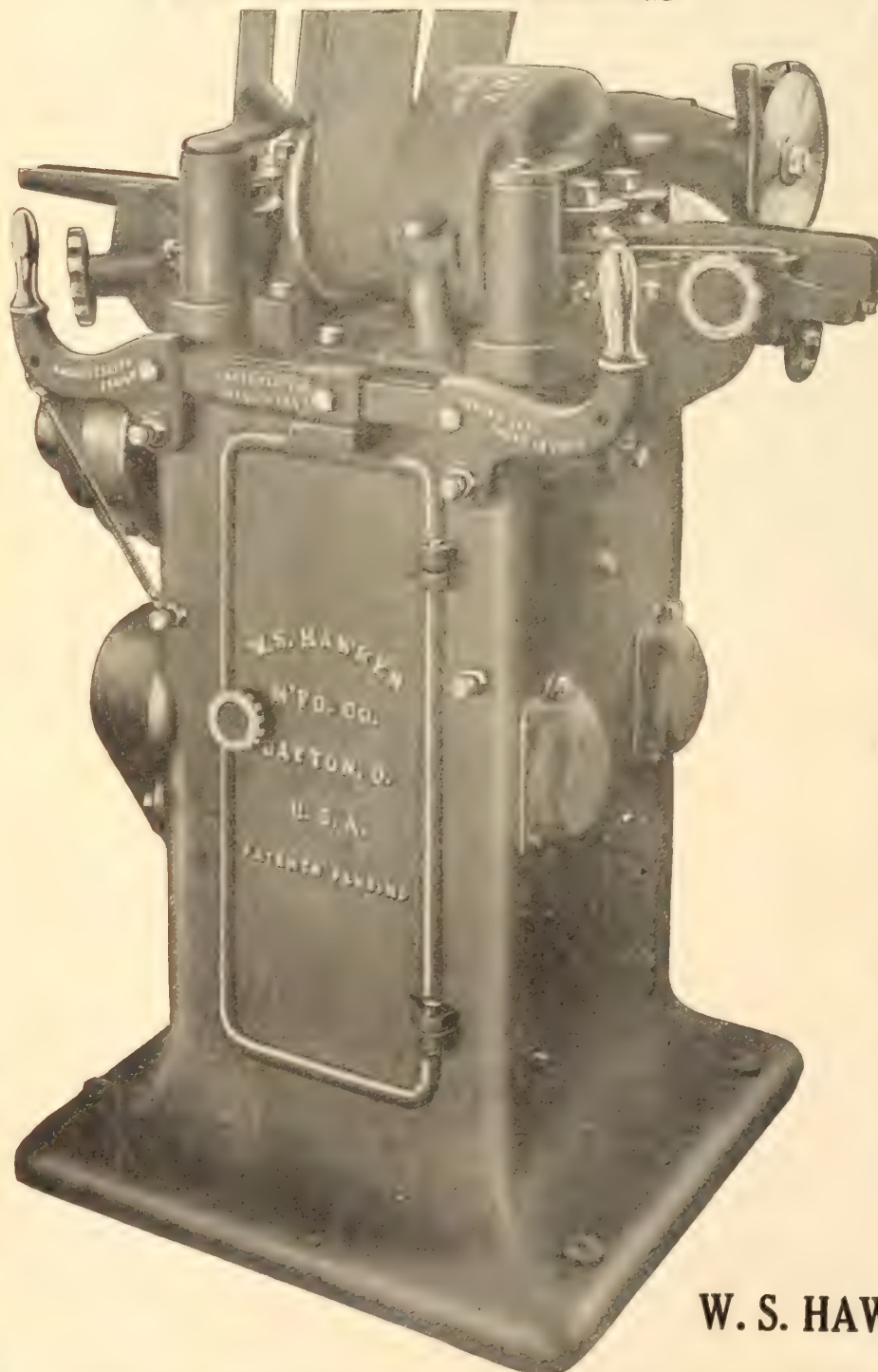


UNIVERSAL ADJUSTABLE CUTTER HEAD Patented.
Infringements (maker or user) will be vigorously prosecuted.

Two Heads

that have put
100% more profit
in the production
of Dowel Stock.

FOR SHIP TREENAILS



W. S. HAWKER.

Inventor and Designer of the World's most
efficient Tubular Turning Machinery

THE

Money Maker Adjustable Rod and Dowel Machine

The machine that is sent under a guarantee
to show you a gain of from 100 to 400 per cent.
before you buy it.

The improved dowel machine that 90 per
cent. of the largest and oldest machinery build-
ers and dealers now endorse and recommend in
preference to the solid chuck machines they
themselves previously built.

One cutter head turns from 1/4 in. to 2 in.
diameter.

Turns hard or soft wood equally well.

Handles heavy, oversized squares.

No choking of the cutter head.

Smooth stock.

Accurate sizes.

• Works stock as short as five inches.

Rolls automatically centre variations in
squares.

Machines built to turn from 1/8 to 6 in.

We want to hear from every user of a solid
chuck dowel machine.

We can save you from one dollar out of
every two, to four out of every five, that the
operation of solid chuck machines costs you.

Engagements for competitive test solicited.

Formal orders not solicited. All sales made
after demonstration.

The only question is, are you willing to cut
cost of your dowel turning to one-half or one-
third of what it costs with any make of solid
chuck machine?

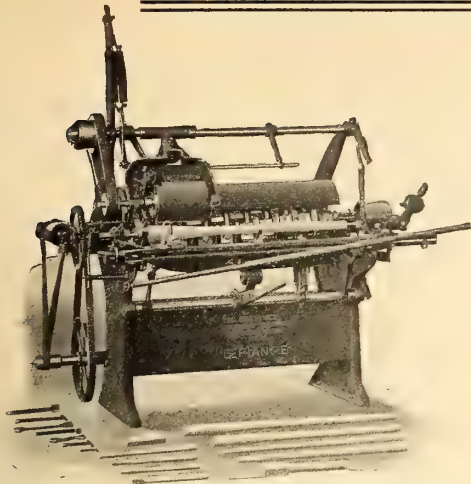
Machine delivers the goods before you buy.

State conditions of stock closely.

Special conditions require special equipment.

W. S. HAWKER MFG. COMPANY

DAYTON, OHIO.



42" Patent Automatic Spoke and Handle Lathe

Defiance High Productive Spoke^{and} Handle Machines

UNEQUALLED IN TURNING A LARGE VARIETY OF SPOKES AND HANDLES

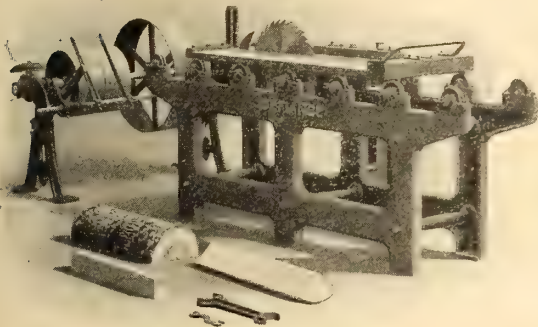
The possibilities of the oscillating table, together with a wide range of adjustments of cutter heads and knives, makes Defiance Automatic Spoke and Handle Lathes unequalled in turning a large variety of shapes. Simplicity in design and Mechanism practically eliminates breakdowns and upkeep cost. Big output in accurate and uniform shapes insures a profitable production.

These machines are made in various sizes, ranging from 18 inches to 58 inches in length. They turn spokes of all kinds for Army Escort Wagon and Artillery Wheels, Farm Wagon and Carriage Wheels, Automobile, Motor Truck, Baby Carriage and Toy Wagon Wheels, etc. They turn handles for small tools, brushes, hammers, hatchets, picks, mauls, etc. Write for illustrated and descriptive circular.

The Defiance Machine Works
DEFIANCE, OHIO, U. S. A.

New York

London



No. 1 Spoke and Handle Blank Saw

You Have Paid for an Installation of **Chapman Double Ball Bearings**

in Your Factory over and over again, BUT—

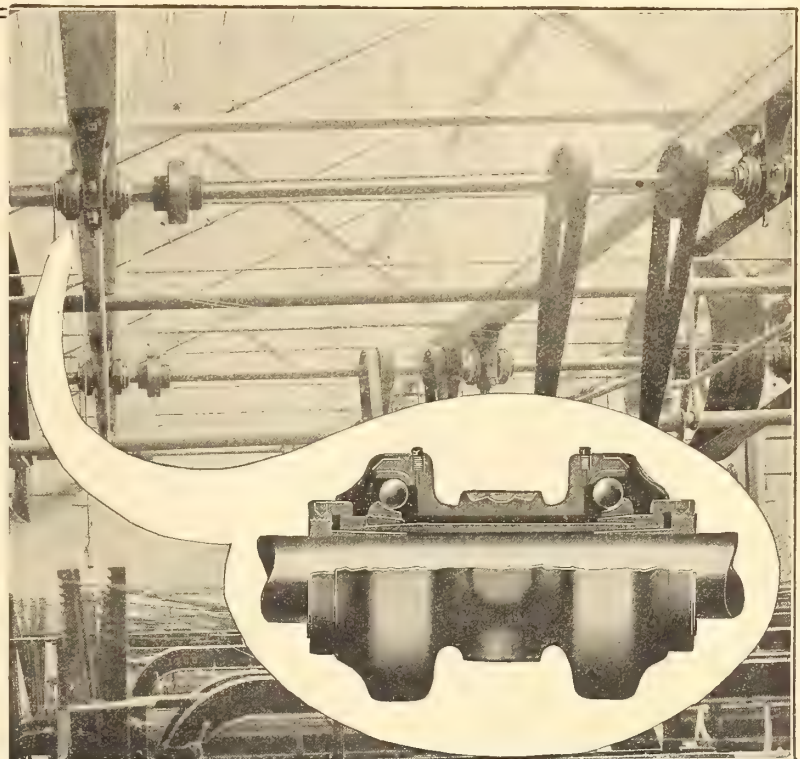
HAVE YOU GOT THEM?

Ordinary line shafting wastes 15 per cent. to 60 per cent. of power.

Line shafting equipped with Chapman Double Ball Bearings will eliminate about 75 per cent. of the friction, thus averaging a total saving of from 15 per cent. to 30 per cent.

Chapman Double Ball Bearings fit any adjustable hanger and require oiling and attention only once a year. No extra equipment required to install.

Write to-day for full particulars



The Chapman Double Ball Bearing Co. of Canada, Limited

Toronto

339-351 Sorauren Ave.

Ontario

American Branch: The Transmission Ball Bearing Co., Inc., 32 Wells St., Buffalo, N.Y.

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A Few New and Refitted Woodworking Machines

from our large stock of up-to-date machinery. Write us for prices and information on any machines not listed that you may require.

CHAIN MORTISERS

Stock No. 44911—Used M-256 Cowan Chain Mortiser with 5/16 in. bar chain and sprocket. No sharpener.
 Stock No. 44566—Practically new M-255 Cowan Chain Mortiser with 5/16 in. chain, bar and sprocket with 1 3/4 in. sprocket extra.
 Stock No. 44568—Practically new M-255 Cowan Chain Mortiser with 3/8 in. chain bar and sprocket and 5/16 in. chain bar and sprocket.
 Stock No. 44567—Practically new M-255 Cowan Chain Mortiser with 3/8 in. chain bar and sprocket and 5/16 in. chain bar and sprocket.

SINGLE SURFACE PLANERS

Stock No. 32959—New 24 x 7 Eclipse Single Surface Planer, top and bottom rolls driven. Feed rolls are 3 1/2 in. diameter, 13 1/2 in. apart.
 Stock No. 31317—New Preston 26 x 10 Single Surface Planer with divided rolls. Feed rolls are 16 in. apart.
 Stock No. 31318—As above.
 Stock No. 44620—Used 24 x 7 Eclipse Planer, Matcher and Moulder, will match 12 in. wide.
 Stock No.—Used 24 x 7 Eclipse Single Surface Planer.
 Stock No. 33111—New 24 x 7 Clark & Demill Single Surface Planer, cylinder driven at both ends. Feed rolls 4 1/2 in. dia., 19 in. apart, all driven.
 Stock No. 29278—Used 30 x 8 McGregor-

Gourlay Single Surface Planer, with divided rolls and chip breaker. Cylinder is driven at both ends. Feed rolls 6 in. dia., 17 in. apart. This is a good heavy type cabinet planer.

Stock No. 31758—Used 24 x 6 Whitney Single Surface Planer, cylinder driven at both ends. Feed rolls 4 1/2 in. dia., 12 1/2 in. apart, all driven.

Stock No. 44913—Used 28 x 6 Whitney type Single Surface Planer, cylinder driven at both ends. Rolls 4 3/4 in. dia., 13 in. apart, all driven.

Stock No. 44846—Second-hand McGregor-Gourlay 24 x 7 Pony Planer, top rolls only are driven. Rolls are 3 in. dia., 13 in. apart. Machine is now manufactured by the C. M. C. Bottom rolls 5 in. dia., and machine will feed 25 ft. per minute. Tight and loose pulleys are 8 1/2 in. x 4 1/2 in., run 1000 r.p.m.

CUT OFF SAWS

Stock No. 42306—Used Greenlee Automatic Cut-Off Saw, travelling saw carriage operated by foot lever and friction, 36 in. dia. saw, cuts 13 1/2 in. above table.

Stock No. 44798—Used McGregor-Gourlay Dimension Rip and Cross Cut Saw Table. Will carry 18 in. saws, ripping 13 in. wide, with rip and cross cut fences, raising and lowering arbor, tilting table 48 in. x 36 in.

Stock No. 42782—New Beach Iron Frame Rip Saw with wooden table, raising and lowering mandrel.

Stock No. 42795-41—New No. 125 Preston Variety Tilting Saw Table.

Stock No. 44733—New No. 127 Preston Variety Tilting Saw Table.

Stock No. 42826—New No. 4 Dodds Variety Tilting Saw Table.

Stock No. 42784—New No. 6 Dodds Variety Tilting Saw Table.

Stock No. 44685—American Lightning Cut-off Saw. Machine is self contained. Size of table 26 x 31 1/2 in.

SASH AND DOOR RELISHERS

Stock No. 44529—M-225 Cowan Sash & Door Relisher and Mortiser.

Stock No. 40964—Jackson Cochrane Door Relisher.

Stock No. 40968—M-234 Cowan Sash Relisher and Mortiser.

BAND SAWS

Stock No. 44627—Used Genuine Westside 36 in. Band Saw, with tilting table, good up-to-date machine; first class condition.

Stock No. 45590—New 36 in. Preston Band Saw with wire guard on top wheel, iron enclosing doors on bottom wheel.

Stock No. 44653—Used 36 in. Preston Band Saw with wire guard on top wheel and iron enclosing doors on bottom wheel arranged for motor drive.

Stock No. 44913—Used 36 in. Defiance Band Saw with re-sawing attachment, will carry 1 1/2 in. saw.

The A. R. Williams Machinery Co., Limited
 TORONTO, CANADA

"Treat your machine
as a living friend"

SAVE

In Your Veneer Room

50% of Your Present Labor Cost

Four Men to do the Work of Eight!

Keen competition is ahead of you.

To compete **successfully** your equipment should include :

A Black Bros." Veneer Taping Machine

Let us place one with you on trial and prove—*That it will cut your Labor Cost in two.*

This machine will tape together all kinds of Veneer, no matter whether it be thick or thin, handling both kinds equally well.

It will use the ordinary gum tape, or it will use plain paper tape and put on its own gum or glue just before it is laid.

Built in two sizes—24 in. and 36 in.

**Ask for prices and
particulars**

WE CONTROL THE CANADIAN PATENT
ON THIS MACHINE.

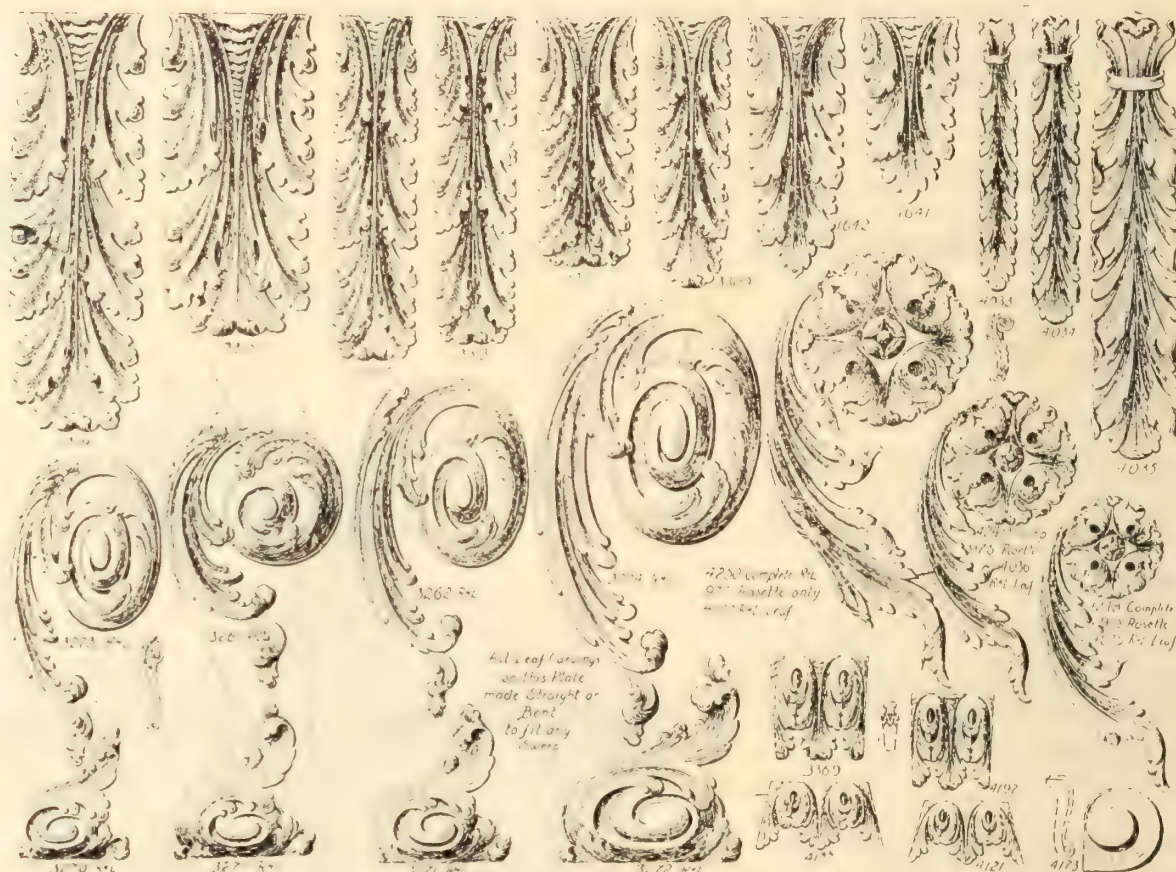


"Black Bros." Patented Veneer Taping Machine

The Preston Woodworking Machinery Co.

Preston, Ontario, Canada Limited

Period Carvings

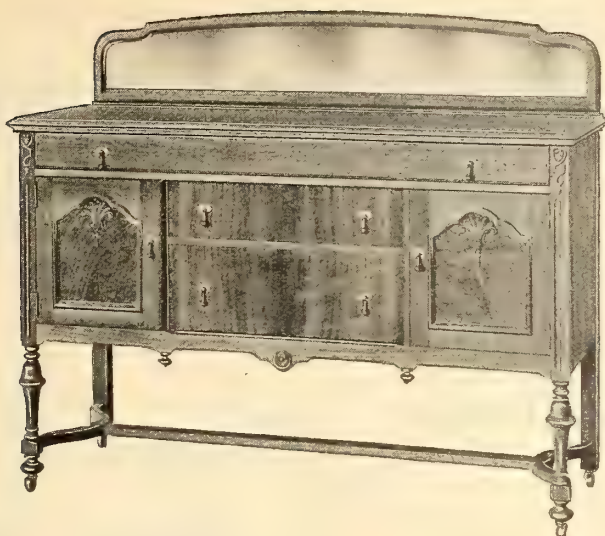


Have you a copy of our New Catalogue? If Not, Why Not?

Woodfibre Ornaments or Compo

WE SOLICIT YOUR INQUIRIES

J. WALTER & SONS
KITCHENER - ONT.



OUR REPUTATION

for quality Walnut has been established, and will be maintained, with the furniture manufacturers everywhere. They know that for quality service and beauty Hartzell's Walnut is yet unbeaten. For thirty-seven years we have been turning out

"Hartzell's Choice Walnut"

to meet the demands of the best of furniture manufacturers. We have studied the problems of Walnut production and have succeeded in making Walnut the most popular wood of the present day. Hartzell's Walnut is direct from the greatest Walnut territories of the United States—Ohio and Indiana.

Tell us what kind of stock you have been using, and in what grades. The chances are we can assist you materially.

We also have Veneers, Lumber, Dimension and Panels of the best quality.

Geo. W. Hartzell

PIQUA, OHIO

OAK

Plain and Quartered
Uniform Color—Soft Texture

Poplar, Ash and other Hardwoods

We have 35,000,000 feet dry stock—all of our own manufacture, from our own timber grown in Eastern Kentucky.

Prompt Shipments

The **Mowbray & Robinson Co.**
(INCORPORATED)

Manufacturers

Office: CINCINNATI, OHIO

MILLS

Quicksand, Ky.; Viper, Ky.; West Irvine, Ky.

Canadian Representative:

M. E. CUMMINGS, 814 Richmond Ave., Buffalo, N. Y.

HUNT, WASHINGTON & SMITH

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Tennessee

Manufacturers of

Quartered and Plain White Oak

Poplar - Ash - Chestnut
Tennessee Red Cedar
Gum and Cypress

Canadian Representative

W. R. YOUMANS

1050 College St.

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H. W. Darby Hardwood Lumber Company

Manufacturers of

Hardwood Lumber

Red and Sap Gum a Specialty

Gum, Oak, Tupelo, Poplar
Ash, Elm, Cypress

Rooms 1531-33 Bank of Commerce & Trust Bldg

MEMPHIS, TENN.

Mills at:

Kosciusko, Miss.
Greenwood Miss.

Money, Miss.
Ruleville, Miss.



Quality and Efficient Service from Manufacturer to Manufacturer

That
rush order

where the particular quality and kind of lumber is an absolute necessity will be filled in such a way as to merit the continuance of our service. You are assured of all that pertains to the best in service and satisfaction. We solicit your custom with a firm belief that we can meet your needs. Write us today requesting us to place you on our list to receive our monthly stock card showing stock on hand.

To serve you direct with first class stock, which will give you the utmost satisfaction, and shipped exactly in accordance with your order, is our greatest desire.

DURING NINETEEN NINETEEN

MEMPHIS BAND MILL CO.
MEMPHIS, TENN.



SOUTHERN HARDWOODS Dry Lumber in Buffalo for Quick Shipment

BASSWOOD				
	Clear	No. 1	No. 2	
1 & 2	Strips	Com.	Com.	
1 in.	1,700	2,200	120,000	40,000
1 1/4 in.	144,300	12,000	146,500	65,800
1 1/2 in.	28,600	....	14,800	5,000
2 in.	16,200	....	40,000	4,500
2 1/2 in.	75,000	....	25,900	13,000
3 in.	550	....	12,500	3,900

BUTTERNUT				
	Clear	No. 1	No. 2	
1 & 2	Strips	Com.	Com.	
1 in.	13,300	35,800	19,600	
2 1/2 in.	3,700	3,000	....

TENNESSEE SCENTED RED CEDAR				
	Clear	No. 1	No. 2	
1 & 2	Strips	Com.	Com.	
1 in.	7,100	4,800	500	
1 1/4 in.	4,400	....	....

CHERRY				
	Clear	No. 1	No. 2	
1 & 2	Strips	Com.	Com.	
1 in.	154,000	24,000	129,200	59,500
1 1/4 in.	....	600	400	
1 1/2 in.	32,000	....	12,700	63,300
2 in.	4,100	....	14,200	10,900
2 1/2 in.	4,500	....	800	
3 in.	3,500	....	2,300	
4 in.	2,900	....	800	1,600

CHESTNUT				
	Clear	No. 1	No. 2	
1 & 2	Strips	Com.	Com.	
3/4 in.	....	1,500	62,000	
1 in.	193,900	7,700	26,300	69,500
1 1/4 in.	88,800	1,300	31,200	61,200
1 1/2 in.	22,500	....	1,000	
2 in.	9,200	....	43,300	107,200
2 1/2 in.	1,700	....	250	
3 in.	16,000	....	300	

RED GUM				
	Clear	No. 1	No. 2	
1 & 2	Strips	Com.	Com.	
1 in.	74,300	8,200	....
1 1/4 in.	24,200	11,200	....
1 1/2 in.	9,000	11,300	....
2 in.	30,100	4,800	....

HICKORY				
	Clear	No. 1	No. 2	
1 & 2	Strips	Com.	Com.	
1 in.	1,200	1,300	600	
1 1/4 in.	150	400	350	
1 1/2 in.	5,000	9,300	2,000	
2 in.	7,350	21,600	10,700	
2 1/2 in.	7,000	5,000	....
3 in.	....	5,580	....
4 in.	100	200	....

PLAIN RED OAK				
	Clear	No. 1	No. 2	
1 & 2	Strips	Com.	Com.	
3/8 in.	30,200	....	....
3/4 in.	97,000	....	3,400	
5/8 in.	11,000	....	19,700	
1 in.	256,200	2,700	7,500	8,400
1 1/4 in.	41,700	2,400	7,000	4,200
1 1/2 in.	68,900	4,300	8,200	24,000
2 in.	46,100	....	45,800	....
2 1/2 in.	18,100	....	600	....
3 in.	23,800	....	5,500	....
4 in.	6,600	....	4,900	....

PLAIN WHITE OAK				
	Clear	No. 1	No. 2	
1 & 2	Strips	Com.	Com.	
3/8 in.	23,400	....	11,900	
1/2 in.	11,300	....	800	
5/8 in.	11,150	....	....
3/4 in.	31,900	....	5,000	9,000
1 in.	188,300	....	8,000	2,200
1 1/4 in.	65,300	....	10,000	6,000
1 1/2 in.	40,500	....	64,400	10,000
2 in.	29,000	....	91,000	....
2 1/2 in.	138,800	....	35,500	....

3 in.	46,800	....	39,800	4,400
4 in.	9,000	....	1,300	....

QUARTERED RED OAK				
	Clear	No. 1	No. 2	
1 & 2	Strips	Com.	Com.	
1 in.	72,200	41,300	38,000	....
1 1/4 in.	500	....	3,900	....
2 in.	1,000	....	7,400	....

QUARTERED WHITE OAK				
	Clear	No. 1	No. 2	
1 & 2	Strips	Com.	Com.	
3/4 in.	....	....	....
1 in.	84,500	25,400	118,600	....
1 1/4 in.	....	....	....
1 1/2 in.	....	....	....
2 in.	67,400	7,800	8,000	4,000
2 1/2 in.	1,000	....	300	
3 in.	1,500	....	2,300	
4 in.	6,500	350	5,100	2,700
5 in.	800	....	....	....

POPLAR				
	Clear	No. 1	No. 2	
1 & 2	Strips	Com.	Com.	
18 in. & up	1 & 2	13	Bright Saps	
5/8 in.	....	9,600	....
1 in.	16,200	41,000	11,600	83,200
1 1/4 in.	2,800	....	....	15,000
1 1/2 in.	4,300	2,600	....	8,000
2 in.	....	15,600	....	13,000
2 1/2 in.	....	20,800	....	24,000
3 in.	....	5,900	....	32,600
4 in.	....	31,000	....	....

Stained Saps				
	Clear	No. 1	No. 2	
1 & 2	Strips	Com.	Com.	
5/8 in.	....	28,300	2,600	
1 in.	23,600	....	88,900	59,300
1 1/4 in.	8,600	....	11,600	6,000
1 1/2 in.	7,700	....	31,000	20,700
2 in.	5,000	....	153,500	20,500
2 1/2 in.	....	9,300	....	....
3 in.	....	40,000	32,000	....

Also Large Stock of ASH, BEECH, BIRCH and MAPLE

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto
MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y.

Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY

Red Gum Sap Gum Oak Tupelo

We carry a well assorted stock ready for immediate shipment of all Southern Hardwoods. Make a specialty of loading mixed cars of various grades and thicknesses for the factory trade. We issue a monthly stock sheet showing at a glance delivered prices on everything we have ready for shipment. If you are not receiving these lists, please write us.

P. J. Lawrence Lumber Co.

Sales Office

Syndicate Trust Bldg.

St. Louis, Mo., U.S.A.

J. V. Stimson & Co.

Manufacturers and Wholesalers Band Sawn

Hardwood Lumber and Dimension Stock

Band Mills and Yards

OWENSBORO, KY.

Permit us to figure on your needs in Plain and Quartered Red and White Oak, Ash, Poplar and Walnut.

Our "Specialty" is Quality

When Dry Lumber Gets Scarce

Remember !

Our dry-kiln is at your service—500,000 feet per month capacity and 10,000,000 feet of lumber from our own band-mills to draw upon.

James E. Stark & Co., Inc.
MEMPHIS, TENN.

Bone Dry

Right now dry lumber is scarce. Here's a list of dry stock ready for prompt shipment. Remember there's 30 years' experience back of every board.

- 1 car 5/8 FAS Plain Red Oak.
- 1 car 5/8 No. 1 Com. Plain Red Oak.
- 10 cars 4/4 No. 2 Com. and Btr. Plain Red Oak.
- 1 car 5/4 FAS Plain Red Oak.
- 1 car 5/4 No. 1 Com. Plain Red Oak.
- 2 cars 6/4 FAS Plain Red Oak.
- 2 cars 6/4 No. 1 Com. Plain Red Oak.
- 1 car 8/4 FAS Plain Red Oak.
- 1 car 8/4 No. 1 Com. Plain Red Oak.
- 3 cars 10/4 FAS Plain Red Oak.
- 1 car 10/4 No. 1 Com. Plain Red Oak.

*Write for our Complete List
with Prices*

North Vernon Lumber Co.
NORTH VERNON, IND.

LOUISVILLE, KY. DYERSBURG, TENN.
Every Board Branded "NVLCO." Quality Guaranteed

Indiana

Quartered Red and White

OAK

1,000,000 feet of dry stock carried
at all times

ALSO PLAIN OAK AND ASH

We manufacture all stock carried

Evansville Band Mill Co.

FRANK M. CUTSINGER, Pres.
GEO. H. FOOTE, Vice-Pres. & Treas.
JOSEPH WALTMAN, Secretary

Mills at EVANSVILLE, Indiana

John I. Shafer Hardwood Co.

Farmers Trust Building
SOUTH BEND, IND., U.S.A.

Below is a partial inventory of the Dry
Furniture Stock which we have ready
for immediate shipment, mostly from
Indiana and Ohio.

BASSWOOD

3" FAS & No. 1 Com. 11,080'

SOFT ELM

5 8" Log Run 18,700'

1 1/2" FAS & No. 1 Com. 15,700'

2" FAS & No. 1 Com. 43,100'

2 1/2" FAS & No. 1 Com. 77,473'

3" FAS & No. 1 Com. 73,248'

HACKBERRY

2" FAS & No. 1 Com. 16,930'

POPLAR

1" FAS No. 1 & 2 Com. 32,869'

2" FAS No. 1 & 2 Com. 27,204'

2 1/2" FAS No. 1 & 2 Com. 2,148'

WALNUT

3 1/4" No. 1 Common 35,000'

1" No. 1 & No. 2 Com. 75,000'

PLAIN OAK

1" FAS & No. 1 Com. 38,568'

1 1/2" FAS & No. 1 Com. 18,275'

2" FAS & No. 1 Com. 228,432'

2 1/2" FAS & No. 1 Com. 94,273'

3" FAS & No. 1 Com. 162,560'

4" FAS & No. 1 Com. 64,820'

HARD MAPLE

1" FAS & No. 1 Com. 20,820'

1 1/2" FAS & No. 1 Com. 10,800'

2" FAS & No. 1 Com. 27,038'

2" FAS & No. 1 Com. 176,691'

3" FAS & No. 1 Com. 15,663'

SOFT MAPLE

2" Log Run 14,200'

2 1/2" Log Run 13,760'

Our motto, "Every Customer a Booster".

We Operate 4 Band Mills

and carry large stocks of

Quartered White Oak

Quartered Red Oak

Plain White Oak

Plain Red Oak

Ash

Poplar

Hickory

Walnut

Gum

Elm

Maple, etc.

Crating and Dimension Stock a Specialty

Can furnish you highly satisfactory
stock at right prices—TRY US.

MALEY & WERTZ
EVANSVILLE, INDIANA

Churchill-Milton Lumber Co.

Sales Office: Greenwood, Miss.

Mills—Greenwood, Miss.; Glendora, Miss.

Let us have your enquiries for—

Ash

Plain Oak

Quartered
White Oak

Quartered
Red Oak

Elm

Tupelo

Cottonwood

Plain Red
Quartered Red

G

Sap

U

Qtd. Red, Sap
No Defect

M

OUR SPECIALTY IS DELTA GUM

The Story of Our Business

Chapter III.—OUR TIMBER

Back of our mills are large bodies of virgin hardwoods, more than 150 million feet of large, long-bodied trees—Yazoo Valley Red Gum predominating. Red Gum thrives and reaches its perfection of growth only on rich deep soil and the valley of the Nile is no richer than the Yazoo Delta. The cream of fertility from more than thirty states has been brought down through the ages by the Mississippi River and the soil of the Yazoo Valley was deposited from this rich silt and built up from what was once the bottom of an arm of the sea. This rich soil produces the best Red Gum that grows. It would delight the eye of an artist to see these fine clean trunks rising sixty to seventy-five feet to the first limb without a blemish to mar the beauty of the gray columns of grandeur. This timber must be cut and utilized to clear these rich lands for the farmer, and such timber as this produces lumber of very desirable widths and lengths.

Another chapter will tell more about our lumber, but in the meantime you would do well to get our prices on the following dry stock, ready for prompt shipment:—

QUARTERED RED GUM			
5 cars	4/4	No. 1 Com. and Selects.	
6 "	5/4	do	
2 "	6/4	do	
1 car	8/4	do	

PLAIN RED GUM			
2 cars	4/4	No. 1 Com. and Selects.	
4 "	5/4	do	
3 "	6/4	do	
1 car	8/4	do	



BELLGRADE LUMBER CO.

MEMPHIS, TENN.

Mills at Isola, Miss., Louise, Miss., and Cary, Miss.

"AMERICA'S FINEST CABINET WOOD"

RED GUM

furniture "has come into its own at last." Whereas a few short years ago the alert

furniture manufacturer (and dealer), with a finger on the public pulse, showed RED GUM only when it was insisted upon, and then with a half-apologetic manner, HE NOW SAYS: "COME RIGHT UP HERE IN FRONT—I WANT TO SHOW YOU MY RED GUM LINES." (Proud of it—and well he may be.)

WHY DON'T YOU, MR. FURNITURE MAKER, GET YOUR RED GUM LINE INTO THE SPOTLIGHT OF POPULAR FAVOR?

There's a lot of honorable profit in meeting public taste. Do you realize what our advertising to the general public (the real market) is doing for manufacturers who feature GUM? "Come on in—the selling's fine" with "America's Finest Cabinet Wood."

WRITE US FOR SAMPLES, PARTICULARS AND
GENERAL INFORMATION. OUR REPLY WILL
BE PROMPT, PERSONAL AND DEPENDABLE.

GUM LUMBER MANUFACTURERS' ASS'N

1314 Bank of Commerce Building, Memphis, Tennessee

Wake-Up, Mr. Furniture Man! Walnut is Plentiful!



Like Mark Twain

Everyone has enjoyed Mr. Clemens' famous comment on his premature obituary notice—"These reports of my death are grossly exaggerated."

So it is with the very erroneous but somewhat prevalent notion that "there isn't any Walnut left in American forests."

It isn't true. (And happy news it is for those who always have loved and coveted this cabinet-wood of the elect.)

There are enormous quantities of American Walnut trees still standing in their patient and supreme majesty—growing year by year and awaiting the moment when they shall come into the homes of their admirers, there to become the choicest heirlooms of the wisest Furniture buyers of two continents.

American Walnut Manufacturers' Assn.

Room 430, 115 Broadway, New York City

ALL BRANCHES OF THE FURNITURE TRADE

will soon Feel the Effects of the series of tributes to our American Walnut which will run Continuously in most of the Best Publications in the Country. Above is an example.

SOME OF THE BEST FURNITURE HOUSES IN THE COUNTRY

are giving some of their better-posted competitors a great advantage over them in the Best Markets. WHY? Simply because they "heard somebody say" that American Walnut was getting scarce. Let them ask us for **THE FACTS!** (See address above).

Two Conclusive Proofs Why You Should Buy Your Lumber From Us



Examine closely the picture above, then read the following letter we received a few days ago from one of the largest manufacturers of Mouldings in the world. (Lumber for Mouldings must be absolutely flat and straight.)

"We have been using exclusively gum lumber, both sap and red, shipped by you for the last three years, and have been well pleased with its character, both as to grade and condition. The condition of same being an evidence of careful handling before shipping. We have been well pleased with the transactions which we have had with you, and will endeavor to continue using your stock as long as available."

We also manufacture Oak, Ash, Elm, and Cypress at Louise, Miss., mills. Get our prices before placing your orders and become a SATISFIED user of Gum or one of the other Southern hardwoods.

BARR-HOLADAY LUMBER CO.

GREENFIELD - OHIO

TO THE TRADE:

We are going to sell the Public the IDEA of *Good OAK Furniture*—then you can sell the *Good OAK Furniture* itself.

THIS MONTH the advertisement shown here is given a circulation of 2,125,000 in the highest class magazines in America. You know, of course, that continued use of this sort of advertising will greatly stimulate demand for *Good OAK Furniture*.

Does your line meet the issue?
If not, it can by next season.

THE SILENT PARTNER OF ARCHITECTURE

After many centuries of dignified and unchallenged supremacy, OAK, "The pride of the permanent home," remains today the world's premier hardwood. (And everybody knows it.) OAK is the first hardwood that naturally think of, and it is the last for which you will ever relinquish your inheritance.

GOOD OAK FURNITURE

Justifies a keen search, a critical insistence and a special order if need be. "There is no finer family possession than a few examples of fine cabinet-work in OAK." "The stately companion of culture." Oak Furniture is "a natural heirloom."

AMERICAN OAK MANUFACTURERS' ASSOCIATION

know about Oak. Ask literature. Room 000, 14 Main Street

Please address
Memphis, Tenn.

AMERICAN OAK MANUFACTURERS' ASSOCIATION

LET US CONSULT TOGETHER FOR THE GOOD OF ALL CONCERNED. WRITE US. WE'LL ANSWER.
ROOM 1408, 14 MAIN STREET, MEMPHIS, TENN.

Special Dry Hardwood

100,000 ft. 4/4" Basswood No. 2 C.&B.

175,000 ft. 4/4" Birch No. 2 C.&B.

100,000 ft. 6/4" Birch No. 1 C.&B.

3 Cars 10/4" Birch No. 2 C.&B.

3 Cars 12/4" Birch No. 2 C.&B.

2 Cars 4/4" Black Ash No. 2 C.&B.

2 Cars 8/4" Black Ash No. 1 C.&B.

Edward Clark & Sons, Ltd.

807-9 Bank of Hamilton Bldg., Toronto

"Gum of Quality" Yazoo River Red Gum

as produced by

**Thomas & Proetz Lumber
Company**

No. 3400 Hall St. St. Louis, Mo.

is carefully manufactured; soft
in texture; dark, rich in color;
and admirably suited for furni-
ture and interior trim.

Mills—Belzoni, Miss.; Catchings, Miss.
Naples, La.

If you are not buying from us, write today.

Perfection in Quality and Service

Service that is prompt and accurate is a big factor in our dealings and at the same time the acme of quality always prevails. We make a specialty of supplying Sap, Red Gum, Crating and Southern Hardwoods. Let us know your requirements in factory stock including all grades and thicknesses of Cypress, Sap, Red Tupelo and Black Gum, Cottonwood, Oak, Elm, Sycamore and Ash. We can ship immediately on receipt of your order.

Cornelius Lumber Company
ST. LOUIS, Mo., U. S. A.

ATTENTION: "Auto Body and Furn. Manfgs."

We are one of the few firms
in the country handling

White Ash Exclusively

We sort it to meet all requirements. Tough texture and Medium texture. Can furnish Special Widths and Lengths one to four inches thick. Write or wire when needing WHITE ASH.

THOMPSON, KATZ LUMBER CO.

Memphis, Tenn.

Cable Address "TomKats"

Dry Spruce and Birch

Good Stocks, Prompt Shipments, Satisfaction

C. A. SPENCER, Limited

Wholesale Dealers in Rough and Dressed Lumber

Offices—500 McGill Building
MONTREAL - - - Quebec

POPLAR GUM BIRCH

For prompt shipment we carry in stock large quantities of Rotary Cut, Sliced and Sawed Veneers and Southern Hardwood Lumber.

Send us your inquiries—our prices and service will insure future business.

Christmann Veneer & Lumber Co.

3750 N. Second St., St. Louis, Mo.

MAHOGANY WALNUT OAK

F. T. DOOLEY, President.

T. E. JONES, Secy.-Treas.

F. T. Dooley Lumber Co.
Inc.

MANUFACTURERS and WHOLESALERS
of

SOUTHERN HARDWOODS

Plain and Quartered Oak
Cypress, Gum, Ash
Soft Maple and Elm

Send us your inquiries

Memphis ∴ ∴ Tennessee

Hardwoods

We can furnish you immediately Factory Stock including all grades and thicknesses of

Walnut, Chestnut
Mahogany, Teak, Oak
Ash, Cypress

ALSO

VENEERS

Oak, Maple, Walnut and
other Fancy Woods

The McLennan Lumber Co.

Limited

MONTREAL

American Hardwood Lumber Co.

St. Louis, Mo.

Large stock of—

**Dry Ash, Quartered Oak
Plain Oak and Gum**

Shipments from — NASHVILLE, Tenn.,
NEW ORLEANS, La., and BENTON, Ark.

Subscribe for the
Canadian Woodworker
and

Furniture Manufacturer

Only \$1.00 per year



Band Mill and Yards, Memphis Plant

STOCK LIST

All Stock Listed is Thoroughly Dry and Ready for Immediate Shipment

PLAIN RED OAK

35M' 5/4 1s and 2s
125M 6/4 1s and 2s
120M 8/4 1s and 2s
12M 10/4 Com. and Bet.
110M 11/4 Com. and Bet.
117M 12/4 Com. and Bet.
25M 15/4 Com. and Bet.
85M 5/4 No. 1 Com.
440M 6/4 No. 1 Com.
70M 8/4 No. 1 Com.
2M 10/4 No. 1 Com.
2M 12/4 No. 1 Com.
14M 5/4 No. 2 Com.
75M 6/4 No. 2 Com.

CEDAR

6M' 4/4

ASH

7M' 5/4 1s and 2s
10M 8/4 No. 1 Com.
1M 10/4 No. 1 Com.
10M 4/4 No. 2 Com.
67M 6/4 No. 2 Com.

CYPRESS

14M' 4/4 Shop
4M 4/4 Common

COTTONWOOD

40M' 4/4 1s and 2s
4M 4/4 Common
3M 9-12" Box Boards
2M 13-17" Box Boards

QRT'D WHITE OAK

3M' 4/4 10" and up
7M 6/4 1s and 2s
20M 8/4 1s and 2s
2M 3/4 Com. and Bet.
75M 6/4 No. 1 Com.
13M 8/4 No. 1 Com.
1M 10/4 No. 1 Com.
8M 6/4 No. 2 Com.
2M 8/4 No. 2 Com.

C. & B. PLAIN RED GUM

20M' 5/4 1s and 2s
200M 6/4

C. & B. QRT'D RED GUM

140M' 6/4 Com. and Bet.
17M 8/4 1s and 2s

QRT'D RED OAK

1M' 6/4 1s and 2s
2M 4/4 No. 1 Com.

LOG RUN ELM

16M' 6/4
10M 10/4
8M 12/4
18M 5/4-8/4 No. 3 Com.
28M 6/4-8/4 No. 2 Com.

4/4 LOG RUN WALNUT

5M' (No. 1 Com.
(No. 2 Com.)

GUM BOX BOARDS

175M' 13-17"
70M 9-12

PLAIN WHITE OAK

2M' 3/4 Com. and Bet.
10M 6/4 1s and 2s
10M 8/4 1s and 2s
2M 10/4 Com. and Bet.
38M 11/4 Com. and Bet.
1M 12/4 Com. and Bet.
7M 15/4 Com. and Bet.
140M 8/4 No. 1 Com.
18M 10-12/4 No. 1 Com.
9M 4/4 No. 2 Com.
125M 6/4 No. 2 Com.
120M 4/4-6/4 No. 3

PLAIN SAP GUM

245M' 5/4 No. 1 Com.
90M 8/4 No. 1 Com.
240M 4/4 No. 2 Com.
60M 5/4 No. 2 Com.
185M 6/4 No. 2 Com.
30M 8/4 No. 2 Com.
14M 10/4 No. 2 Com.
9M 12/4 No. 2 Com.
15M 5/4 No. 3 Com.
7M 12/4 No. 3 Com.

HICKORY

15M' 6/4 No. 3 Com.
1M 10/4 No. 3 Com.

TUPELO

7M' 4/4 1s and 2s
5M 6/4 1s and 2s
4M 4/4 Common

Wire your order at our expense

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MEMPHIS, TENNESSEE

GEO. C. BROWN & COMPANY

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Main Office, Memphis, Tenn.

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DRY STOCKS AVAILABLE FOR QUICK SHIPMENT

Tennessee Aromatic Red Cedar

DELIVERED PRICES AND DESCRIPTIONS CHEERFULLY FURNISHED

Oak Timbers Cut to Order

SAP GUM

	Feet
4/4" 1st and 2nd, 18" and up	15,000
4/4 Box Boards, 13-17"	150,000
4/4 Box Boards, 7-12"	150,000
4/4 1st and 2nd, 13-17"	70,000
4/4 No. 2 and 3 Common	250,000
5/4 No. 1 Common	35,000
5/4 No. 2 and 3 Common	11,000
8/4 No. 2 and 3 Common	5,000

SELECTED RED GUM, PLAIN

	Feet
4/4" 1st and 2nd	250,000
4/4 No. 1 Common	300,000
5/4 1st and 2nd	15,000
5/4 No. 1 Common	15,000
6/4 1st and 2nd	50,000
6/4 No. 1 Common	200,000

SELECTED RED GUM QUARTERED

	Feet
4/4" 1st and 2nd	150,000
4/4 No. 1 Common	150,000
6/4 No. 1 Common	30,000
8/4 No. 1 Common	35,000
10/4 1st and 2nd	3,000
10/4 No. 1 Common	2,000
12/4 1st and 2nd	14,000
12/4 No. 1 Common	8,000

SELECTED RED GUM—(Figured Wood)

	Feet
4/4" 1st and 2nd Plain	10,000
5/4 1st and 2nd Plain	2,000
4/4 1st and 2nd Quartered	13,000
5/4 1st and 2nd Quartered	200
6/4 1st and 2nd Quartered	600
10/4 1st and 2nd Quartered	9,000
12/4 1st and 2nd Quartered	2,500

PLAIN RED OAK

	Feet
4/4" No. 1 Common and Selects	40,000
4/4 No. 2 Common	12,000
5/4 No. 1 Common and Selects	6,000
5/4 No. 2 Common	9,000
6/4 1st and 2nd	3,000
6/4 No. 1 Common and Selects	30,000
6/4 No. 2 Common	15,000

QUARTER SAWED RED OAK

	Feet
3/4" No. 1 Common and Better	3,000
4/4 No. 2 Common	300
6/4 No. 1 Common and Better	1,200
6/4 No. 2 Common	3,500

PLAIN WHITE OAK

	Feet
4/4" 1st and 2nd	18,000
4/4 No. 1 Common and Selects	100,000
4/4 No. 2 Common	15,000
5/4 1st and 2nd	500
5/4 No. 1 Common and Selects	1,500
6/4 1st and 2nd	13,000
6/4 No. 1 Common and Selects	35,000
6/4 No. 2 Common	50,000
10/4 No. 1 Common and Better	3,500

QUARTER SAWED WHITE OAK

	Feet
4/4" No. 1 Common and Selects	3,000
4/4 No. 2 Common	3,000
5/4 No. 1 Common and Better	2,000
1/1 No. 2 and Better Strips	3,000

MIXED OAK

	Feet
4/4" No. 2 S. W.	7,500
4/4 No. 3 Common	100,000
5/4 No. 3 Common	6,000

ELM

	Feet
4/4" Log Run	75,000
4/4 No. 2 Common	10,000
4/4 No. 3 Common	5,000
6/4 Log Run	30,000
8/4 Log Run	40,000
8/4 No. 2 Common	15,000
8/4 No. 3 Common	1,500
12/4 Log Run	35,000

SOFT MAPLE

	Feet
5/4" Log Run	4,000
6/4 Log Run	10,000
8/4 No. 3 Common	4,000
16/4 Log Run	37,000

MISCELLANEOUS HARDWOODS

	Feet
8/4" L. R. Sycamore	20,000
5/4 No. 3 Common Ash	7,000
6/4 No. 3 Common Ash	45,000
4/4 L. R. Cottonwood	2,000
6/4 L. R. Pecan	12,000
6/4 No. 3 Common Pecan	25,000
8/4 L. R. Pecan	30,000
10/4 L. R. Pecan	9,000
4/4 L. R. Black Gum, Plain	18,000

**Tennessee Aromatic Red Cedar in straight carlots or mixed with hardwoods.
Prompt, courteous and efficient service at all times—Try us.**

Guaranteed Delivery has Been our Best Asset

Following is dry, band sawn stock, of our own manufacture. May we serve you?

ELM
45,000' 5/8" Log Run
15,000' 1" Log Run
75,000' 2" Log Run
5,000' 2 1/2" Log Run
90,000' 3" Log Run
12,000' 3" No. 2 Common
30,000' 4" Log Run
70,000' 2 1/2" Log Run (Rock)

TUPELO GUM
4,000' 1 in. 1 & 2
30,000' 1" Nos. 1 & 2 Common
9,000' 1" Box Boards 13 to 14"

PLAIN RED GUM
50,000' 1" No. 1 & 2
75,000' 1" No. 1 Common
4,000' 1 1/4" No. 1 & 2
50,000' 1 1/4" No. 1 Common
3,000' 1 1/2" No. 1 Common

PLAIN SAP GUM
4,000' 5/8" 1 & 2
25,000' 5/8" No. 1 Common
25,000' 3/8" No. 2 Common
25,000' 3/4" No. 1 Common
19,000' 3/4" No. 2 Common
30,000' 1" 1 & 2
90,000' 1" Common
90,000' 1" No. 2 Common
90,000' 1" Box Boards, 9 to 12"
30,000' 1" Box Boards, 13 to 17"
15,000' 1" Pan. & W. No. 1, 18" up
5,000' 1 1/4" 1 & 2
3,000' 2 1/2" No. 1 & 2
10,000' 2 1/2" No. 1 Common
20,000' 2 1/2" No. 2 Common

QUARTERED RED GUM
15,000' 1" 1 & 2
30,000' 1" No. 1 Common
5,000' 1 1/4" 1 & 2
75,000' 1 1/4" No. 1 Common
2,000' 1 1/2" 1 & 2
90,000' 1 1/2" Common
25,000' 1-7/16 in. No. 1 Common
6,000' 2" 1 & 2
90,000' 2" No. 1 Common
15,000' 2 1/2" 1 & 2
30,000' 2 1/2" Common
30,000' 3" 1 & 2
40,000' 3" Common
5,000' 1" 1 & 2 (Figured)
4,000' 2" 1 & 2 (Figured)
40,000' 2" No. 1 Com. (Figured)

QUARTERED RED GUM
Sap. No Defect.
15,000' 1 1/4" No. 1 Common
7,000' 2" 1 & 2
15,000' 2" No. 1 Common
30,000' 2 1/2" 1 & 2
30,000' 2 1/2" No. 1 Common
50,000' 3" 1 & 2
65,000' 3" No. 1 Common

PLAIN RED OAK
15,000' 5/8" Nos. 1 & 2 Common
30,000' 1" 1 & 2
30,000' 1" No. 1 Common
30,000' 1" No. 2 Common
15,000' 1 1/4" 1 & 2
50,000' 1 1/4" No. 1 Common
20,000' 1 1/4" No. 2 Common

40,000' 1 1/2" No. 1 Common
15,000' 1 1/2" No. 2 Common
50,000' 2" 1 & 2
75,000' 2" No. 1 Common
30,000' 2" No. 2 Common
3,000' 2 1/2" 1 & 2
20,000' 2 1/2" No. 1 Common
30,000' 2 1/2" No. 2 Common
10,000' 3" No. 1 Common

QUARTERED RED OAK
5,000' 3/4" No. 1 Common
20,000' 1" 1 & 2
30,000' 1" No. 1 Common
20,000' 1" No. 2 Common
3,000' 1 1/4" 1 & 2
16,000' 1 1/4" No. 1 Common
3,000' 1 1/4" No. 2 Common
3,000' 1 1/2" 1 & 2
2,000' 1 1/2" Common
5,000' 2" 1 & 2
20,000' 2" No. 1 Common
12,000' 2" No. 2 Common

PLAIN WHITE OAK
8,000' 5/8" Nos. 1 & 2 Common
10,000' 1" 1 & 2
22,000' 1" No. 1 Common
15,000' 1" No. 2 Common
32,000' 1 1/2" No. 1 Common
3,000' 1" No. 2 Common
15,000' 2" 1 & 2
30,000' 2" Common
14,000' 2" No. 2 Common
40,000' 2 1/2" Common
50,000' 3" Common
15,000' 3" No. 2 Common

QUARTERED WHITE OAK
15,000' 1 1/4" 1 & 2
30,000' 3/4" No. 1 Common
15,000' 1" 1 & 2
30,000' 1" No. 1 Common
12,000' 1" No. 2 Common
15,000' 1 1/4" 1 & 2
30,000' 1 1/4" Common
15,000' 1 1/4" No. 2 Common
4,000' 1 1/2" 1 & 2
3,000' 2" 1 & 2
50,000' 2" No. 1 Common
5,000' 2" No. 2 Common
15,000' 1" Clear Face Qtd. White Oak Stps., sap no def, 2 1/2 to 5 1/2"

SOUND WORMY OAK
5,000' 5/8"
3,000' 3/4"
30,000' 1"
50,000' 1 1/4"
70,000' 2"

POPLAR
5,000' 1" Log Run
2,000' 2" 1 & 2
25,000' 2" Nos. 1 & 2 Common
SYCAMORE
40,000' 2" Log Run
40,000' 2 1/2" Log Run
5,000' 3" Log Run

WALNUT
10,000' 1" 1 & 2 S. N. D.
30,000' 1" No. 1 Common
15,000' 1" No. 2 Common
6,000' 1 1/2" No. 2 Common
4,000' 2" No. 1 Common

MAY BROTHERS

MILLS and OFFICE

MEMPHIS, TENNESSEE

Canadian Representative: C. BEUMER, Guelph, Ont.

Stock of Black Walnut Lumber

Ready for Prompt Shipment

May 1, 1919

Thickness	1sts & 2nds 6-10"	1sts & 2nds 10-14"	1sts & 2nds 14" and up	1sts & 2nds 6-7 ft.	1sts & 2nds 4-5 1/2 ft.	No. 1 Selects	No. 1 Common	No. 2 Common	Clear Strips	Clear Face
1/2 inch	70450			2100		2100	63200	44200		
5/8 inch	21760			2700		3600	75700	78900		
3/4 inch	45250	5200		1500	1050	3300	48800	39600		
4/4 inch	119900		2500	7200	6000	149900	315700	618600		
5/4 inch	24600	7200	1000	1200	1200	7100	37200	51200	1000	
6/4 inch	12100	4000	800	500	200	3800	113300	87700	600	
8/4 inch	13100	7400	900	250	100	5800	36700	104600	1200	
10/4 inch	11800			500	300	4400	159400	20100		
12/4 inch	6900						27400	3600		
16/4 inch	5800						6300	1300		

We can also furnish Mexican Mahogany, White Ash, Yellow Poplar, Cherry and Plain and Quartered White Oak

The Kosse, Shoe & Schleyer Company

Eastern Branch
Baltimore, Md.

Main Office and Band Mill
Cincinnati, O.

I have the following stock for immediate shipment

- 1 Car 2 in. and 3 in. Hard Maple.
- 1 " 2 in. and 3 in. Soft Elm.
- 1 " 2 in. Canadian White Oak.
- 1 " 1 in. and 2 in. White Ash.
- 1 " 1¼ in. Basswood.
- 1 " 1 in. Basswood.
- 1 " 2 in. Canadian Chestnut.
- 3 " 1 in. Spruce Crating.
- 5 " 5/8 in. Spruce Crating.

Besides the above stock I can supply anything in Oak, Gum, Chestnut and White Oak from ¼ in. to 4 in. West Virginia stock either plain or quarter sawn. Try a car of my West Virginia Plain White Oak and Chestnut.

Excelsior and Wood Wool always on hand in Kitchener.

Write, Wire or Phone Your Inquiries

PERCY E. HEENEY

202 Weber Chambers, KITCHENER, ONT.

BLACK WALNUT

Large Stock ready for immediate shipment, also Well Assorted Stocks at our Yards and Mills

in West Virginia and Kentucky

OAK

**Maple, Hickory, Chestnut
Basswood and Poplar**

Prices and stock list on request

Burns & Knapp

Lumber Company

CONNEAUTVILLE, PA.

Dry Stock on Hand at our West Virginia, Kentucky, Tennessee and Mississippi Band Mills

QUARTERED WHITE OAK

- 30 M ft. 4/4 1s and 2s.
- 40 M ft. 4/4 No. 1 Com.
- 60 M ft. 4/4 No. 2 Com.
- 33 M ft. 5/4 1s and 2s.
- 26 M ft. 5/4 No. 1 Com.
- 10 M ft. 6/4 1s and 2s.
- 60 M ft. 6/4 No. 1 Com.
- 140 M ft. 4/4 2½ to 5½ Strips.

PLAIN WHITE OAK

- 120 M ft. 4/4 1s and 2s.
- 68 M ft. 4/4 No. 1 Com.
- 80 M ft. 4/4 No. 2 Com.
- 60 M ft. 5/4 1s and 2s.
- 70 M ft. 5/4 No. 1 Com.
- 33 M ft. 6/4 1s and 2s.
- 72 M ft. 6/4 No. 1 Com.
- 80 M ft. 8/4 1s and 2s.
- 43 M ft. 8/4 No. 1 Com.
- 120 M ft. 10/4 Com. and Better.
- 50 M ft. 10/4 Wormy.
- 140 M ft. 12/4 Com. and Better.

PLAIN RED OAK

- 68 M ft. 4/4 1s and 2s.
 - 26 M ft. 4/4 No. 1 Com.
 - 70 M ft. 5/4 1s and 2s.
 - 80 M ft. 5/4 No. 1 Com.
 - 20 M ft. 8/4 1s and 2s.
 - 30 M ft. 8/4 No. 1 Com.
- All the above exceptionally fine soft textured stock, good widths and lengths. Can cut Special Oak Bills.

POPLAR

- 38 M ft. 4/4 1s and 2s.
- 40 M ft. 4/4 Saps.
- 20 M ft. 4/4 Selects.
- 59 M ft. 4/4 No. 1 Common.
- 80 M ft. 4/4 No. 2 Common A
- 60 M ft. 4/4 No. 2 Common B
- 140 M ft. 5/4 All grades now sorting.
- 200 M ft. 6/4 All grades now sorting.
- 108 M ft. 8/4 All grades now sorting.

- 20 M ft. 10/4 Common and Better.
 - 30 M ft. 12/4 Common and Better.
 - 10 M ft. 16/4 Common and Better.
- All the old-fashioned virgin soft textured mountain stock.

ASH

- 120 M ft. 4/4 Log Run.
 - 90 M ft. 6/4 Log Run.
 - 40 M ft. 8/4 Common and Better.
 - 20 M ft. 8/4 No. 2 Common.
 - 50 M ft. 10/4 Common and Better.
 - 80 M ft. 12/4 Common and Better.
 - 20 M ft. 16/4 Common and Better.
- All good tough stock. Will sell on grade.

RED AND SAP GUM

Two Million Feet, all grades and thicknesses, both Plain and Quartered, at our Mississippi Mills, DRY.

Write for our attractive delivered prices on any of the above; also a full description of our stock.

The W. E. Heyser Lumber Company

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Hardwood Dowels

Plain, Straight and Spiral Grooved



"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co.
Orillia, Ontario Limited

Sawmills at Zebra and Orillia, Ont.
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Holly Ridge Lumber Co.

Incorporated

MAIN OFFICE
LOUISVILLE, KY.

This Company markets only the products of its own Band Mills located at

HOLLY RIDGE, LA.
MONROE, LA.
MEEKER, LA.
ST. LANDRY, LA.

These mills are sawing logs removed from the lands of this Company, owned by it in fee simple.

It is our policy to make high grades and to ship our customers exactly what they buy, and in no instance do we mix the grade.

These mills are producing Gum, Ash, Elm, Oak and Cypress.

A consumer placing business in the hands of this Company is assured of having direct shipments from the producer to the consumer, and that the business will be conducted on a high plane in every respect.

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J. H. Bonner & Sons

Memphis, Tenn.

Mills:

Jonquil and Ruffwood, Ark.

Manufacturers

Band Sawn
Hardwood
Lumber

Write or wire for prices on
Gum, Oak, Elm, Etc.

Southern Hardwoods

Our mills now producing high grade stock, well manufactured, including:

Poplar, Chestnut, Basswood
Buckeye, Hickory, Red and
Sap Gum, Plain and Quartered Red and White Oak.

Agricultural and other special purpose stock, Oak Planking, Railway Material, Heavy Timbers, in fact almost anything in the line of Hardwood Lumber.

Buskirk-Rutledge Lumber Co.
Cincinnati, Ohio.

SOUTHERN HARDWOODS

Well Manufactured from Good Timber

Unexcelled Quality and Service

For twenty-five years Paepcke Leicht quality hardwoods have satisfied the most exacting users in the wood-working industries of the United States, Canada and Europe.

Strict uniformity of inspection and quality year after year, with a truly superior service, have consistently kept old customers on our books.

Your interest, also, lies where you can get the most in satisfaction and value.

We Specialize in Oak and Gum

Paepcke Leicht Lumber Company

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Hardwoods and Veneers

LUMBER

Mahogany (250,000 ft. in stock, all kinds)	Birch
Walnut	Basswood
Qtd. White Oak	Maple
Plain Red Oak	Beech
Poplar	Elm
Gum	Ash
And all U. S. A. Hardwoods	And all other Canadian Hardwoods.

VENEERS

SAWN	Vermillion	Birch
Qtd. White Oak	Poplar	
Qtd. Red Oak		ROTARY CUT
Plain Oak		Birch, Poplar, Ash, Gum,
Mahogany (all kinds)		Walnut, Basswood, Maple
English Oak		SLICED
Teak Ash Cherry		Mahogany, Walnut
		Figured Gum

We also Specialize in

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and
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No. 5

Greater Efficiency the Need of To-day

Every man engaged in manufacturing wood products is today confronted by extremely high production costs. It is costing him more than ever before to turn out a finished article. An analysis seems to indicate the fact that the main items which go to make up the cost of production appear for the present, at least, to have an irreducible market value.

Labor and raw materials—the two big factors in manufacturing costs—are very high. All indications point to the prices of these commodities remaining at their present level. There is little hope for the belief that relief may come through a lowering of the prevailing prices. In view of this the logical solution seems to be to take the fullest possible advantage of every opportunity or opening to make these items go farther, and in addition to increase the quality of the product.

Increasing the quality of an article would appear to entail an increase in the cost of that article. To a certain extent that is true, but the increase is not in proportion to the enhanced value of the product. While a manufacturer would be justified in augmenting his prices, at the same time the consumer will receive greater value for the money he spends. The satisfaction that is derived from a high grade product remains long after the price of the article itself is forgotten. The trend of future production seems to point to higher quality rather than cheaper commodities.

Labor at present rates of pay must be conserved. The proper utilization of labor so necessary to secure the maximum output is one of the foremost problems confronting the manufacturer to-day. Every employer should make a consistent effort to develop the skill and efficiency of his workmen. It is a well-known fact that unskilled help gives the smallest re-

turn, and while it receives the least compensation, yet the increased returns from skilled labor would justify a manufacturer in employing none but the most skilled workmen at the best rates of remuneration.

Every inducement should be made to encourage the men to apply themselves to the task of adding to their knowledge and skill. Instruction along technical lines, including books and other literature, might be provided.

Make certain that all labor is being used to secure the maximum results. This entails a thorough and minute study of the plant and equipment. Is it possible through the installation of up-to-date machines to accomplish more with less effort than is at present being expended? The production capacity of a man can be materially increased—that is what the manufacturer is striving for—through the use of high production, labor-saving equipment. In the columns of this journal will be found advertisements, describing the latest in this line of equipment. These can be profitably read by every manufacturer, and he will find that production would be greater and manufacturing costs less if some of these machines were installed.

Take each operation performed in turning out the finished product, and analyze it separately. Is there any way by which it might be simplified. Is there any lost motion that could be readily eliminated? Is it practical through the employment of new equipment to increase the output of that particular operation?

Next, consider the operations as a whole. Does the material progress as smoothly through the plant as it should? Would a re-arrangement of certain machines improve the sequence of operation? Is the even flow of material interrupted at any particular machine or machines? Every such interruption is a waste of labor and efficiency. If the order in which the operations are being performed were altered, would it be possible to utilize certain equipment to greater advantage?

The question of material and waste should be gone into in the same thorough manner. Study the different requirements of your products and then persist until the most suitable grade of material is secured. Do not fall into the error of thinking that money is being saved when a cheap grade of material is bought. The other extreme is just as bad as there will be a needless increase in costs if an unnecessarily high grade of stock is used.

We have now reached a state in national development where we should carefully husband our resources. In most industries there are costly and wasteful methods in operation. It may be an over-extension of the idea of service, the use of an excessive number of grades and sizes, a lack of co-ordinated information on credits or an extravagant use of samples.

Ideas and Suggestions for Interior Trim—No. 3

Pleasing Treatment of Porch and Entrance—Proportion and Restfulness in Design—Designs for Wood Cornices and Rafters

By W. H. Shaw

We are so constituted, and perhaps happily so, that impressions are often more important to us than substantiated facts. When impressions are sufficiently strong, we may be quite blinded to surrounding conditions. Nowhere is this point of psychology more potent than in the feeling we have about the homes we enter. If the approach is pleasing and the entrance charming, we are prepared to interpret everything which we see on entering as beautiful or at least interesting. We enter such a home expecting pleasant things and pleasant people. We usually find what we are looking for and expecting.

There are two things in our buildings in this country which are essentially American. The skyscraper in our cities and our big livable porches. Each of these have been developed to fill a definite and pressing need.

Probably no one thing adds a greater element to our comfort in summer living than our roomy screened and protected porches. Some porches seem to "happen," others seem to belong where they are placed, and are an essential part of the house, not an after thought. Even a porch which is added later should have this quality of "belonging."

Entrance Suggestive of Restfulness

The first requirements of the entrance architecturally is to call attention to the point the observer is hunting by giving importance to the entrance and making it easily and quickly placed. As with most points of good design, good architecture must first satisfy the mind as to matters of fact. Any sham or deception is bad design and bad architecture. Even the beauty of past traditions will not much longer satisfy the mind. The present age has broken with all tradition. It is taking its own mentality seriously and insisting that the things which it does, seriously, must satisfy its common sense. Gone is the fretwork and such like rubbish from the fronts of our homes, along with many another old and out-of-date form of decoration, such as characterized the houses built some years ago, and everything now tends towards utility, harmony, proportion and restfulness.

As a result, "common sense" is not so rare as in the days of the old jingle, for people are giving it more exercise and it is growing and developing, like the young of the species.

Colonial Designs Usually Followed

The traditions of the Colonial, and especially the Colonial entrance, stays with us because it is not only intrinsically beautiful, but it is also reasonable. The work of the early colonial builders is one of the powerful influences in a large part of the building that is done to-day. The modern builder cannot do his work satisfactorily without some knowledge of the colonial type.

The details shown in the drawings are Colonial in character and are often seen in residence architecture. Usage rather than purity of architectural style is indicated, the latter being left to more technical works upon the subject.

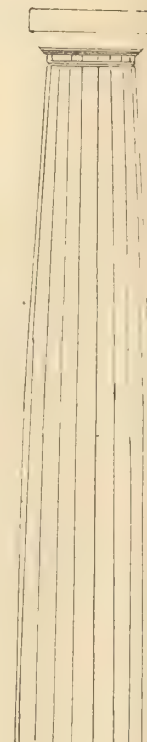
The entablature with its architrave, frieze and cornice is outlined, showing the various mouldings and the gutter. The columns are shown in different sizes and arrangements. Those lettered E are rounded and the pier G is square with panelled sides. The large column starts from the floor and the balustrade is cut between. The remaining columns and the pier start at the top of the balustrade. D is a pedestal that may properly be used to support the column, while at C the siding or shingles are carried up to the top of the rail. The "filling" between the upper and lower rails of the balustrade shown at C is to be repeated to fill any given stretch of rail between columns and if not too coarse and open, makes a very good composition. The balusters shown at A are in two styles spaced about two-thirds of their width apart. On cheap houses, balusters are usually too far apart. At B is shown a simple lattice effect as a filling beneath the porch. Three courses of stone are shown adjoining supporting the pedestal and columns, while at the right the siding or shingles are indicated, carried to the grade line, finishing upon a footing of cement or stone.

Foundations under columns, piers or steps, should be carried below frost except in very porous soil where dampness drains away quickly.

At J are shown the capitals of the columns. That in the centre is Ionic, the others being Doric. Unless of a very plain character, capitals are best purchased from dealers in composition ornaments, because of the excellence of the moulding and moderate cost. These are only a few of the methods of treating porches; in-

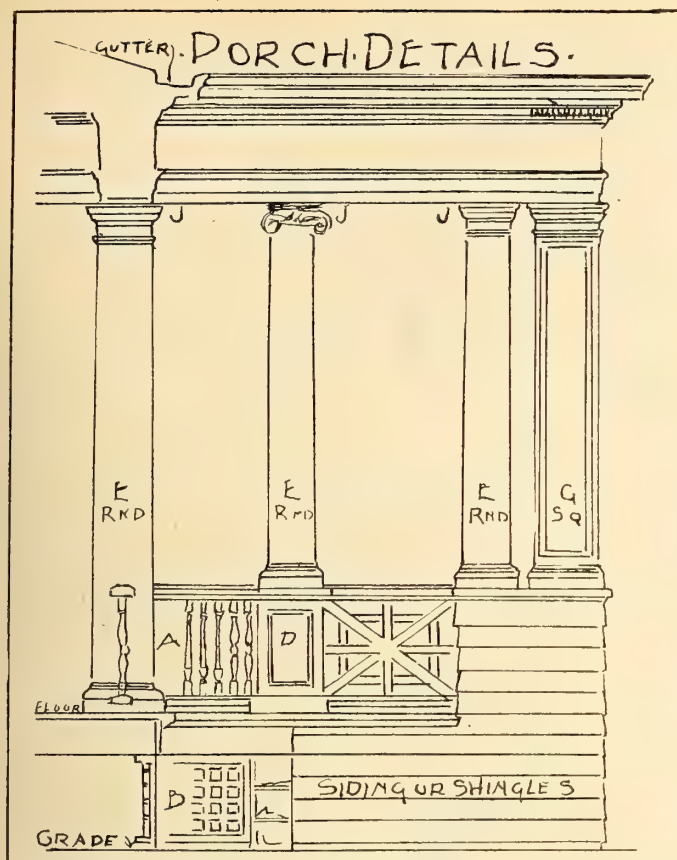


GREEK DORIC



GREEK DORIC



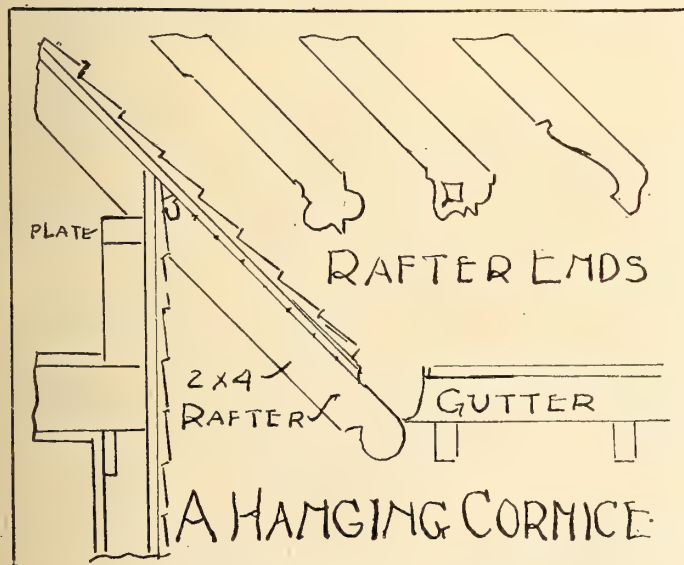


Detail for a Colonial Porch.

stead of the column and pier E and G the siding might be carried up to the top or brick might be used.

While we do not understand the meaning and are not sure of the origin of the carved volute of the old Greek Ionic capital, nor of the smaller scroll and peculiar foliage carved into the Corinthian and composite caps so commonly used in Colonial design, we are so familiar with them against the background of all buildings since the time of the Renaissance, that the eye still accepts it without question, as the symbol of that which is more elaborate than the simple mouldings.

The careful proportions and subtle curves of the Colonial and more or less intricate grouping

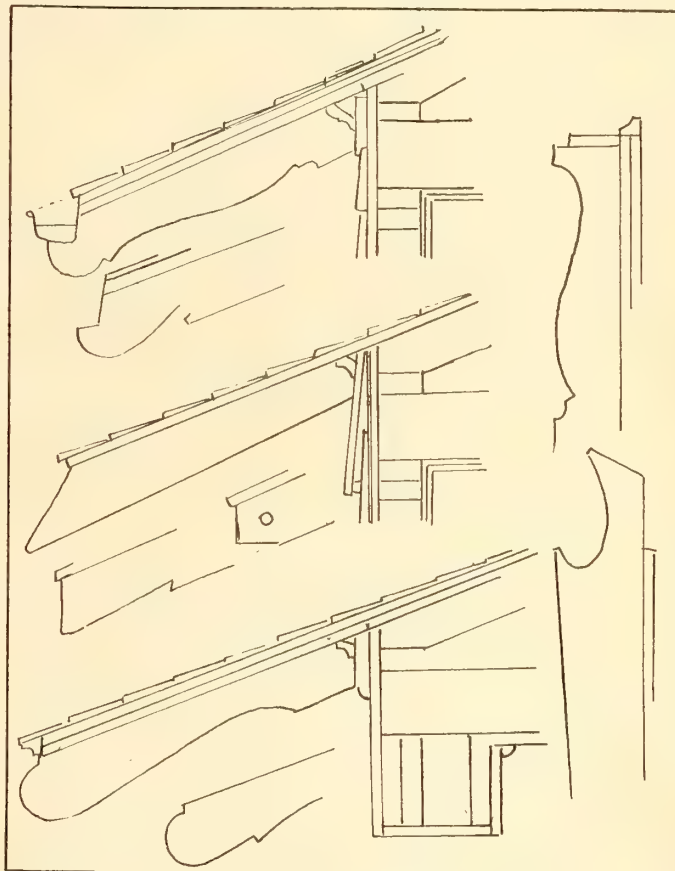


Suggestions for hanging cornices.

of mouldings could have only originated and been worked out in an age less occupied with a multiplicity of things than was our own, even before the war. It belongs to a period of leisure and of comparative prosperity. The tendency of our own period is towards a simplicity which is almost austere, and which welcomes the Colonial as a relief from its own austerity without at the same time requiring a great amount of original thinking.

White Shows Details to Advantage

The woodwork was almost invariably painted white in the Colonial work, either of the north or south. The reason of this was very evident. The native wood used was a soft white pine, and it was



Bungalow cornices with wide projections.

painted white to bring out the delicacy and beauty of the details.

Have you ever noticed how clumsy a coarse moulding looks when it is painted white, that a simple board with square edges generally looks better than a moulding that is not well designed? Then notice a moulding with small faces and delicate curves, such as are found in Colonial work, when it is painted anything but white, and you will see that the small shadow lines lose their values and the whole moulding becomes ordinary.

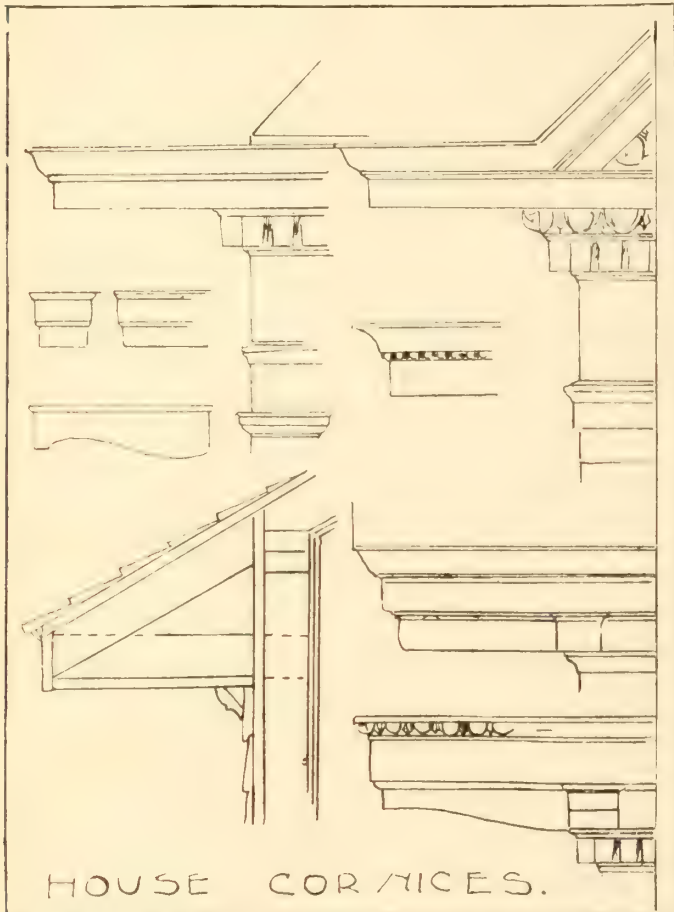
The kind of cornice for any given house depends upon the architectural style employed. Some styles allow of considerable liberty in detail, while others, such as Classic, are very exacting, and each moulding has a certain shape and definite proportion. The Colonial architecture is properly Classic in style, but has been modified in many details. The rafter construction of the hanging cornice shown in figure.

The rafter end is cut as suggested in the several outlines of the drawings and is securely spiked to the

plaster. V joint sheathing is nailed face downwards upon the rafter ends and can be seen from below. The gutter is shown attached to the end of the rafter and is drained by a lining properly pitched to down spouts. The shingles should be nailed with short nails to avoid drawing through the V sheathing.

In Fig. 4 several bungalow cornices are shown in projection from two to five feet, with and without gutters.

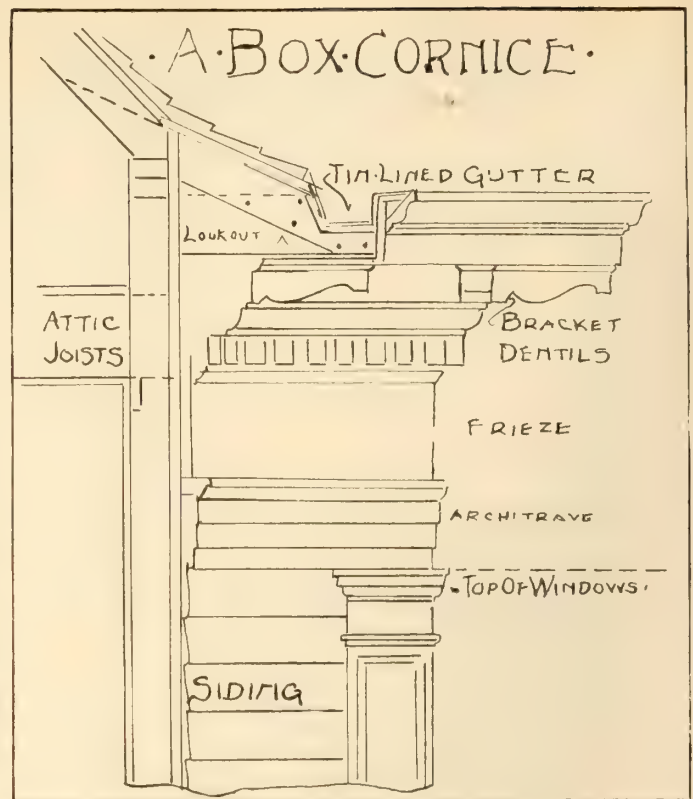
To those who are building homes, and who wish to follow in part at least a type of Colonial building there is this we would say: If you are building of brick, especially for the entrance, there is perhaps nothing more satisfying than the Colonial. But it should be used in the spirit of the time and not dispossessed of much of its beauty by crowding it into unwanted positions. It should be used as an heir-



Designs for house cornices.

loom, a jewel or an "old master," because it is more beautiful than a later time affords. Study the photographs of some of these good old houses. Do not try to copy them. They do not fit your condition. But build in the same careful, sincere way, studying the actual things you want to accomplish, the essential needs which you must fill. In that spirit you can use and profit by the skill of the Colonial builders.

A chair manufacturer recently endeavored to place an order with a lumber mill for 1,000,000 feet of gum lumber. The salesman stated he could not accept an order for more than half a million feet. In due time his office notified the chair factory that it was impossible to accept the order for half a million feet, but an order would be entered for 200,000 feet with no guarantee as to what they could furnish in excess.



Details and suggestions for box cornice.

Export Chances in Woodenware

All kinds of woodenware are reported to be scarce in Great Britain, leaving an opportunity for Canadian manufacturers to supply a large part of the demand. Negotiations have been in progress recently between manufacturers in Ontario and British firms. The representative of one company sent advices from Britain recently that additional samples should be sent at once in order to secure the business that is offering. There has been a tendency on the part of British buyers to expect prices almost identical with those that prevailed before the war. Manufacturers of woodenware products point out that it is impossible to consider these views, on account of the high rates of wages. Quotations on a variety of products have been furnished the British firms, and hope is entertained by prospective exporters that actual business will materialize in the near future.

It is stated that the requirements of the British market for woodenware cannot be met by the factories of that country during the next two or three years, and that large amounts of goods will have to be imported. Buyers are looking to Canada. Outdoor seats, camp chairs, folding chairs, luggage stands, etc., are reported to be in good demand.

While the Canadian market for summer furniture, such as seats, swings, couch hammocks, etc., has not opened up yet, the opinion is held by manufacturers that there should be a fairly healthy trade this year, since the season is quite well advanced. In common with many other lines of business buyers have been holding off from making purchases until the market prospects are more definitely assured. The domestic market outlook for seasonal goods in this line is considered, however, to be quite encouraging from the manufacturers' standpoint.

Will it Cost Less to Manufacture Furniture ?

Manufacturing Costs Analysed—Uncertainty of Labor Market—Overhead Show Marked Increase—New General Level of Prices

The idea was abroad generally that as soon as fighting on a large scale in Europe had ceased, prices for foodstuffs and raw materials would very speedily return to normal. As the conflict lengthened in time, it was recognized that as so large an amount of these commodities had been exhausted and that it would take a considerable time for these stocks to be replenished, it would take a longer time for conditions to right themselves, but given time, prices would once again be down to former levels. Toward the end of the war, however, many suggested that it was very unlikely that pre-war prices would prevail again any time after the conflict, on account of conditions prevailing in the labor market, as well as on account of measures which of necessity would be taken for the self-protection of the Allied nations. The latter predictions have been found, to the present, to be the more correct estimate.

Readers of the "Canadian Woodworker" who are interested in the manufacture of furniture, and allied industries, are vitally interested in this subject, on account of the large amount of raw materials and labor, which enter in the production of their output. The question has been raised by many as to how long present high prices for finished products will remain in force. The writer can speak only with reference to the furniture manufacturing industry. On looking the question over with more or less care, we are driven to the conclusion that it would be quite unwise to look for a quick return to old time selling prices in furniture.

Advance in Price of Supplies

The reason for this conclusion is not hard to find. Prices which have to be paid for raw materials of all classes, are very much higher than they were five years ago, and there is little, or no, indication of decline. Advances in cost of some of the items which we have enumerated below, which all furniture manufacturers use, will show how unreasonable it is to be looking for pre-war selling prices. These advances have taken place during the last five years:

Lumber average	50%	Varnishes	25%
Shellac	100%	Fillers	60%
Turpentine	50%	Benzine	60%
Ammonia	300%	Boiled Oil	300%
Paraffine	50%	Rubbing Felts . . .	100%
Sand-Paper	50%	Glue	50%
Twines etc.	70%	Bent Glass	125%
Nails	100%	Mirrors in proportion.	

These items are taken at random, and the complete list is by no means confined to them. Prices in these commodities are very firm at present, indeed, in some lines the tendency is for still higher figures. These facts speak for themselves. While these prices prevail, and there is no hope of any radical change to take place. It is out of the question to expect anything like selling figures which existed five years ago to speedily find their way into our price lists.

We have not yet taken into account the labor situation. It is not revealing any secret to state that woodworkers in general hitherto have not been by any means overpaid, the profit on furniture being very

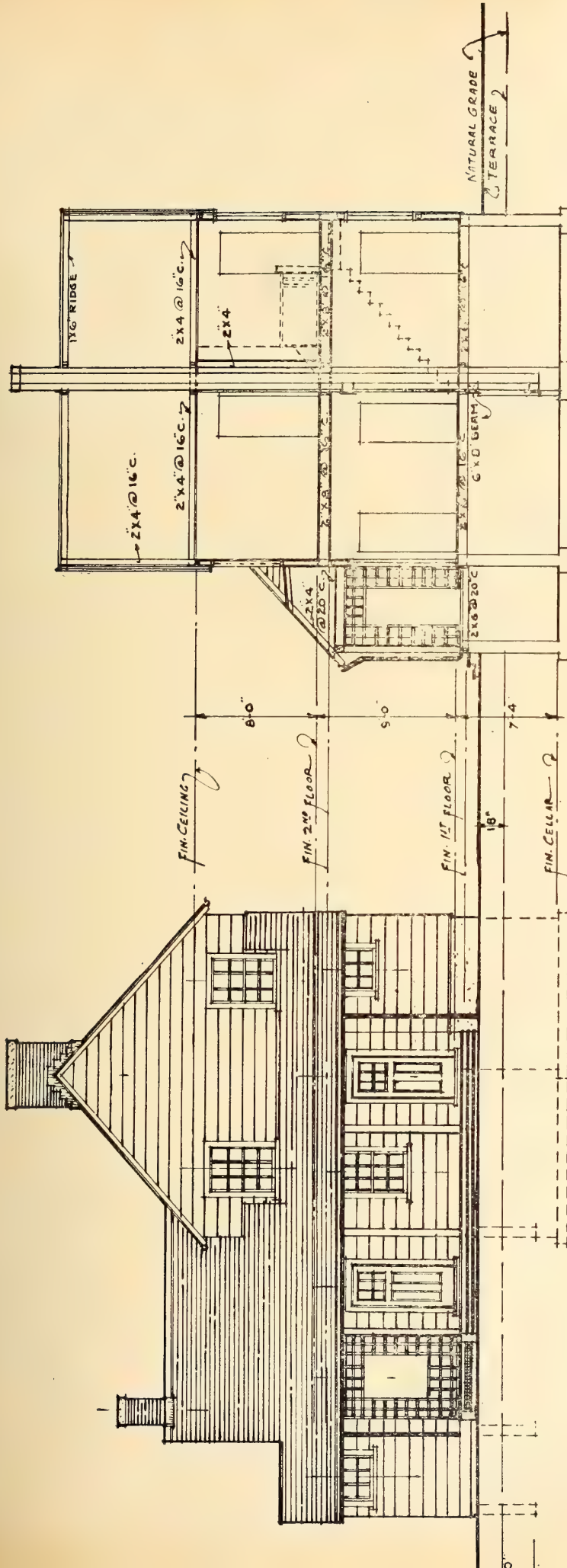
small. Metal workers, with no more mechanical ability or skill, than mechanics in the woodworking trades, have received higher scales of wages. The situation was aggravated on account of the fact that the request for enlistment for overseas service was heartily responded to by the men in our factories, and now, on their return, many of them having received some mechanical experience, extending their knowledge of general conditions, naturally are choosing those branches of industry which offer them better remuneration for their services.

Wages May Show Further Increase

This means that if our industry is to retain the services of highly skilled mechanics, and also if our factories are to recruit apprentices for their work, we will have to offer approximately a wage which would be in line with similar branches of other manufactures. This phase of the question is not a new one to those who are closely connected with the executive bodies of furniture manufacturing concerns, and may be of interest to those whose business has not called their attention to these facts. During the past five years, the average wage of the skilled and unskilled woodworker, has advanced anywhere from 60 to 100 per cent., which considering the increased cost of food and other household expenses, is by no means exorbitant. We believe it would not be surprising to some, if further increases in wages should be found necessary in the future.

In passing we would make reference to the consequent effects of the above upon what is generally known as the general overhead expenses of plants. It will be readily perceived that the conditions we have named will have a marked effect on operating costs, such as staple supplies, fuel, maintenance of machinery as well as new machinery, repairs of all kinds, local and federal taxes, insurances, travellers' expenses, royalties, war taxes, etc. Then again, for a manufacturing industry to take its proper place in its community, it must support benevolent institutions in the locality, as well as assist anything of a patriotic nature which approaches it for support. It does not require a lively stretch of imagination for the mind to suggest to itself a large number of these added items of expense, all making it impossible to produce a finished article for anything like the figure at which it was produced a few years ago.

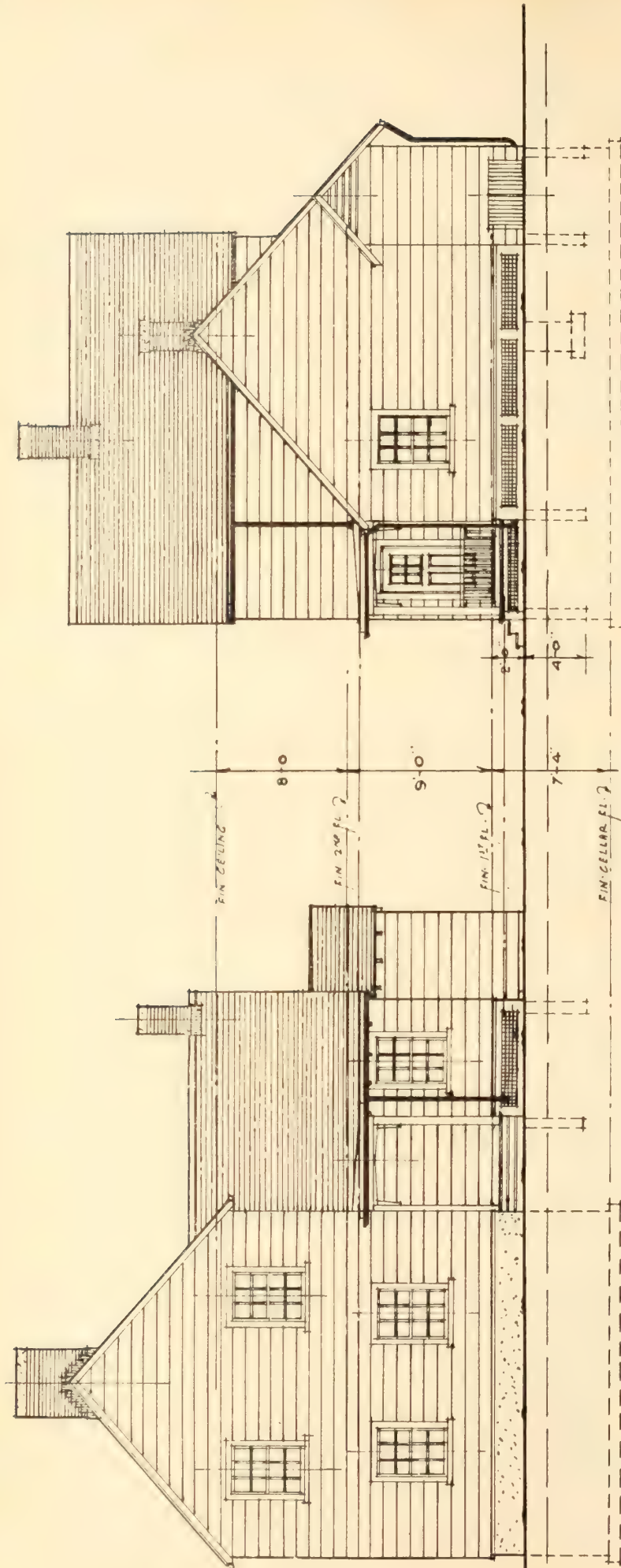
It would be wise for furniture manufacturers in general, and also for retailers, to reconcile themselves to conditions, which, as far as human eyes can see, are going to prevail for an indefinite period. Prices cannot go down at present. In fact, in some cases they may have to go up still higher. Materials, in spite of close buying and the careful watching of markets, cannot be procured for anything like old prices, and labor is certainly going to be a larger factor in the future than it has in the past. In regard to the latter, employers of the woodworkers are glad that conditions are adjusting themselves so that they can pay wages which are more in keeping with those paid in some other industries. It would seem, therefore, that lower prices cannot be looked for at the present time, and that altered conditions preclude the possibility of pre-war prices ever existing again.



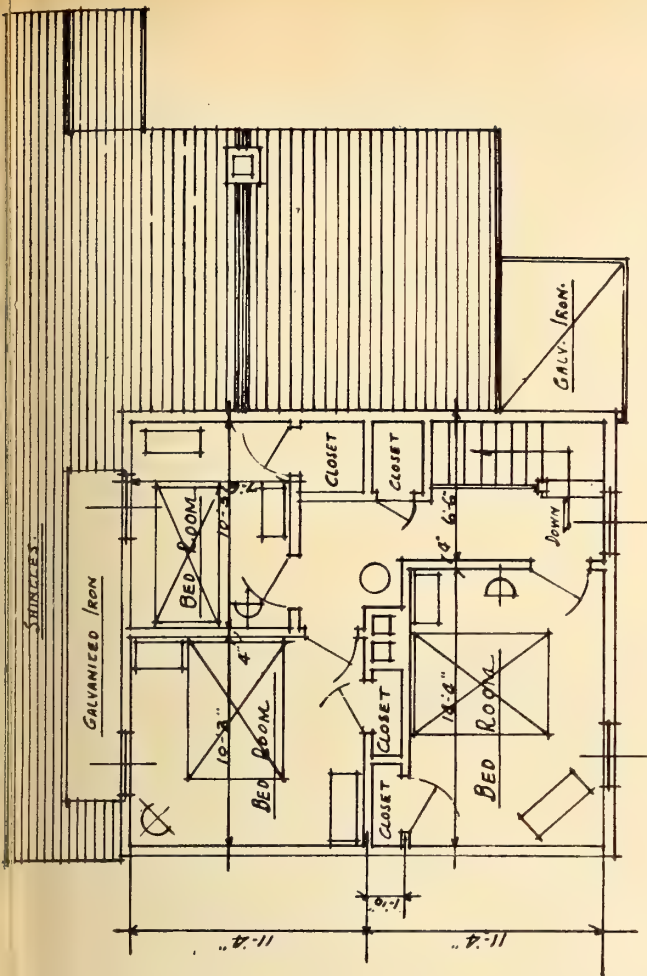
REAR ELEVATION

SECTION

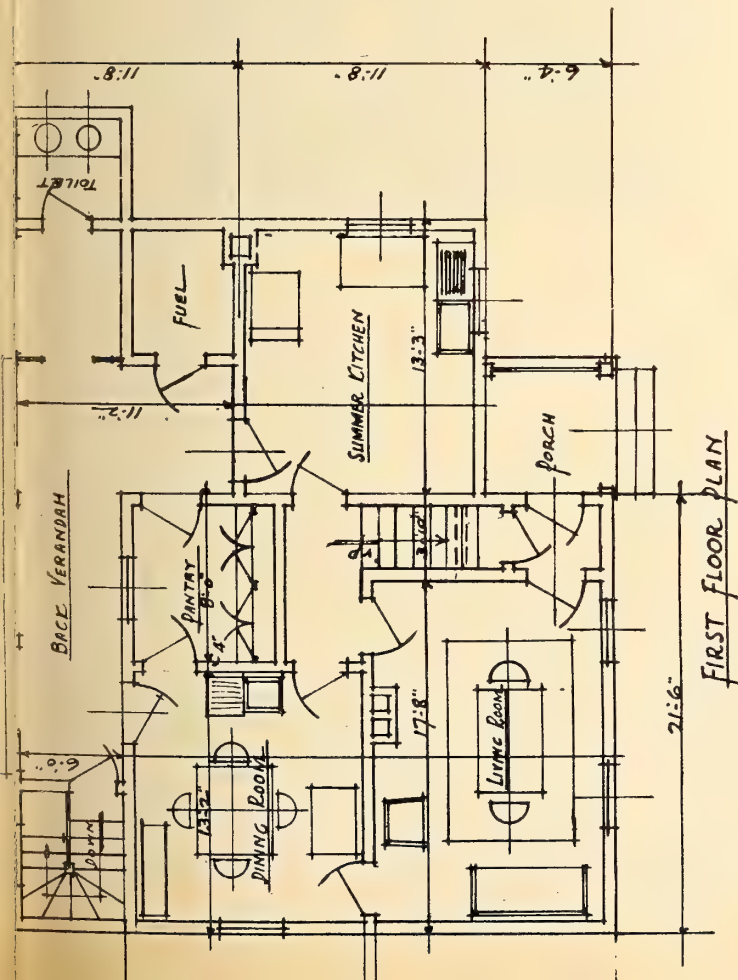
ONTARIO HOUSING COMMITTEE.	
HOUSE FOR FARM HELP	SCALE 1/8" = 1'-0"
ELEVATION & SECTION	D-3
DATE Dec. 1918	No. 1 of 3 DRAWINGS.

FRONT ELEVATIONSIDE ELEVATION

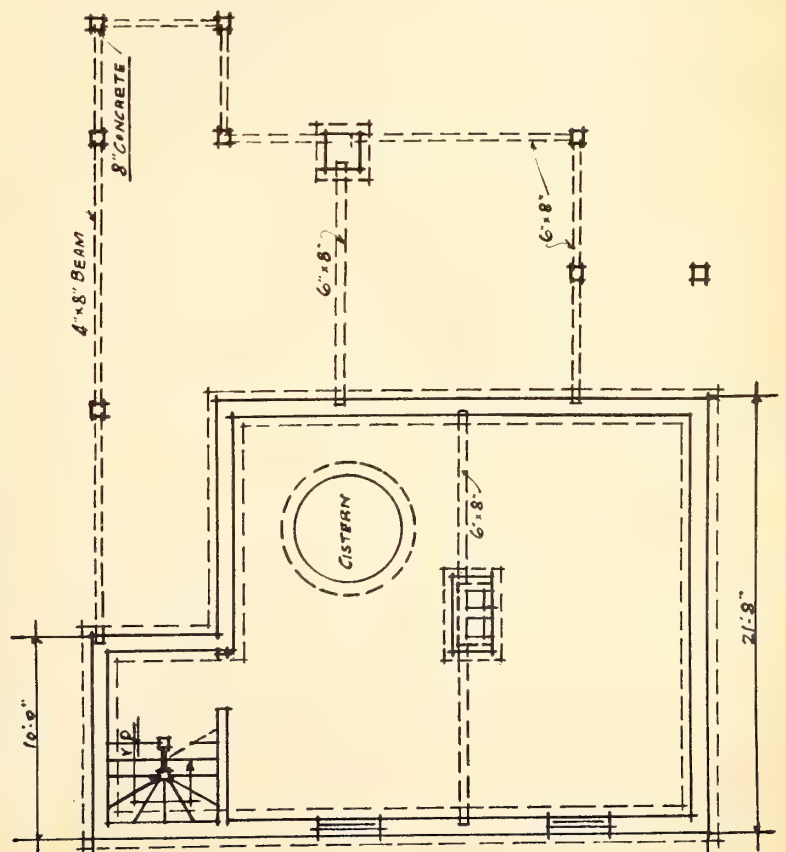
ONTARIO HOUSING COMMITTEE	
HOUSE FOR FARM HELP	SCALE 1/8" = 1'-0"
ELEVATIONS	D-3
DATE DEC. 1918	No. 2 of 3 DRAWINGS.



SECOND FLOOR PLAN



FIRST FLOOR PLAN



CELLAR & FOUNDATION PLAN

ONTARIO HOUSING COMMITTEE		
HOUSE FOR FARM HELP	D.3	SCALE 1/8" = 1'-0"
PLANS		
DATE DEC 1918	No 3 of 3 DRAWINGS.	

How Others are Securing Results

Overhead Carriers Reducing Handling Costs - Team Work Among Department Heads—Bonus System, Modern Machines.

Overhead carriers are being used to replace floor trucks in a large number of small work-shops as well as in the large manufacturing plants. Where used a considerable amount of the labor formerly used to move material and other bulky stock, is saved. The tracks can be suspended from the ceiling and arranged so as to give ready access to all parts of the establishment.

Less cost as well as convenience are on the side of the overhead method, since with it one man can do the work for which several men and a number of floor trucks would be required. For instance, the man in

been largely responsible for building up the kind of efficient plant organization that this company possesses.

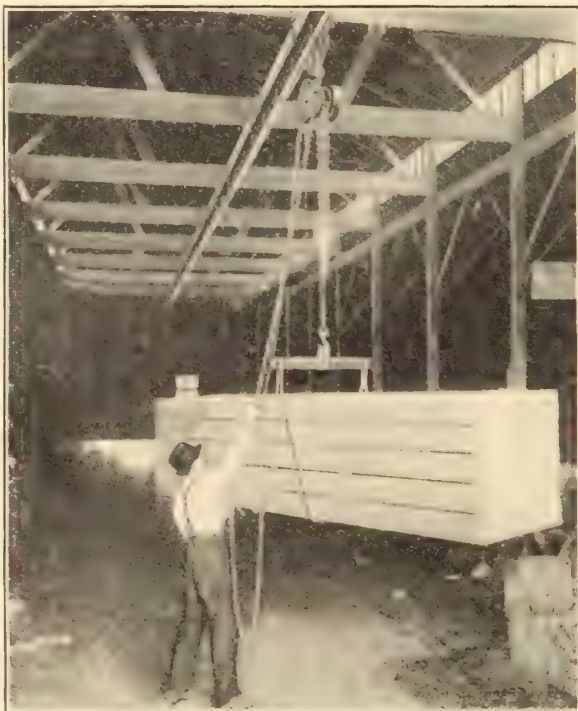
The mainspring of the Kiel "works" is a regular monthly meeting of the foremen from all departments where every man can say what he pleases, can get his complaints or ideas right out of his system without fear of getting in bad with the boss, or any of his fellow foremen. In fact, the monthly foremen's meeting held one evening each month in the main office is the biggest thing for creating team-work, bringing out new production ideas, and stimulating morale generally that ever happened to the Kiel plant, according to Mr. Wilson.

"Here is the way it works out," he explained. "At one meeting, which we had not long ago, the foreman of one of the departments complained that the department which passed along work to him was not getting stuff through promptly, and he wanted something done about it. Of course, the other foreman was quick to defend his position, and to make a long story short, when the matter had been threshed out it was found that neither of these men were to blame, but instead the blame rested on a condition further back, which was straightened out so that work could go along smoothly and swiftly in the two departments mentioned. The point is, of course, that had the foreman who was not getting stuff promptly 'bawled out' the other foreman privately, the two would have probably ended up their argument by holding a deep-seated grudge against each other, and instead of pulling together would have gone along bucking each other for days with an attitude of the 'other fellow's to blame, and I should worry,' with the result that their own efficiency would be lowered, the efficiency of their men would be hurt and the entire plant would suffer in the long run.

Bonus System as an Aid

A figure is set on the amount of work in dollars that each department should turn out in a month. If a certain department turns out more than that amount a bonus is paid the department for extra hustling and this bonus is distributed among the men on the pro-rata basis of their regular salaries. Of course, there is an opportunity for every department to win a bonus. In fact, here lies one of the best features of the plan. In other words, if one department is slow about getting stuff through, the men in the next department find out why the stuff is coming through slowly and have their foreman investigate so that they can speed up and win a good bonus check. It will be seen that in the bonus plan, as worked out by Kiel, all of the departments are interdependent, thus making for the highest grade team-work possible.

In order to let the men in the different departments know just how they stand in working for a bonus a bulletin is issued to every department foreman every ten days, showing the amount of work that is coming through. In this way the men are encouraged to better efforts and better team-work. I might mention that the "bonus zones" are calculated in thousand dollar amounts. In other words for every thousand dol-



Handling heavy boxes with overhead carrier.

the illustration is at work in a large plant moving heavy boxes. These boxes weigh anywhere from two hundred to twelve hundred pounds. With the overhead track, carrier and familiar endless chain block one man, with a boy for a helper, handles boxes that formerly took from four to eight men to move, and in less time.

The variety of uses to which the overhead system has been adapted illustrates the scope, and the possibilities of its usefulness. This system is being successfully operated in woodworking plants where it handles lumber and other bulky material; in garages where it lifts our engines and transmissions and carries them to the repair section; in paper plants where it handles the heavy rolls of paper; in stock and store rooms where it facilitates the distributing and storing of the finished product.

A writer in the "American Furniture Manufacturer" in describing the methods of the Kiel Furniture Company, Milwaukee, says that team work among the men in all departments of the factory has undoubtedly

lars in production over the set figure that each department produces a bonus payment is made and distributed in the manner outlined.

Value of Latest Equipment

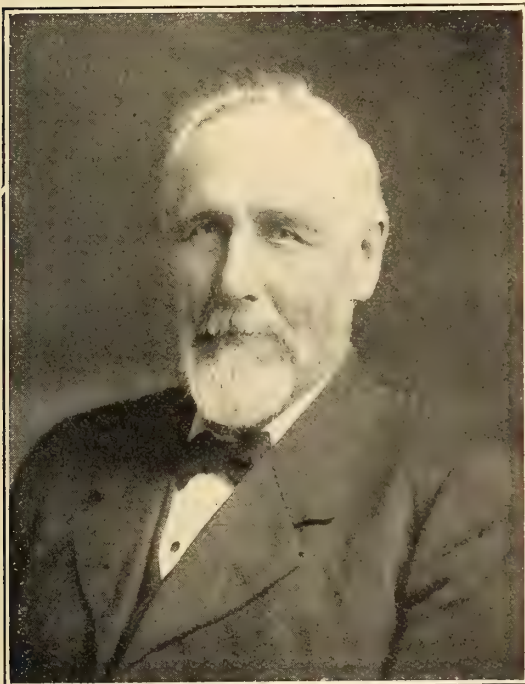
Speaking of machinery, "the best is the cheapest in the long run." As proof of this statement the superintendent of the plant showed me a new machine that is used only for one certain operation, but which cost a sum that at first hand might seem out of proportion to its usefulness. He explained as follows: "Four years ago we purchased a machine, the newest and

best there was at the time, to do this same operation. However, just a few months ago another better machine for this operation was put out, a machine that would do a little better job and that would work faster, so we bought it.

There are always opportunities to turn out a better product or to do good work a little faster if the right tools are provided. Modern machinery not only helps the men do their work faster and better, but actually makes them proud of the organization they work for, and makes them more contented all around.

Modern Woodworking Plant in Moncton, N.B.

How Paul Lea Overcame Loss by Fire and Other Vicissitudes—Present Plant Thoroughly Equipped for High-Class Work—Safety Appliances Receive Attention.



Paul Lea, Moncton, N. B.

In Moncton, N. B., near the banks of the Petidodiac River, will be found the plant of the Paul Lea Company, Limited.

Thirty-six years ago Mr. Paul Lea, who had been manufacturing in Charlottetown, P. E. Island, since 1871, decided that Moncton with its growth and prosperity, offered a better opportunity for taking advantage of the great possibilities that he saw ahead in the woodworking industry. Moving to Moncton in 1883 he started manufacturing in a small way.

In 1902 he suffered a setback when his plant was completely destroyed by fire. As he was not carrying any insurance at that time, the loss, \$20,000, was a heavy one. He commenced rebuilding immediately and in a few months had the present factory completed and ready for business.

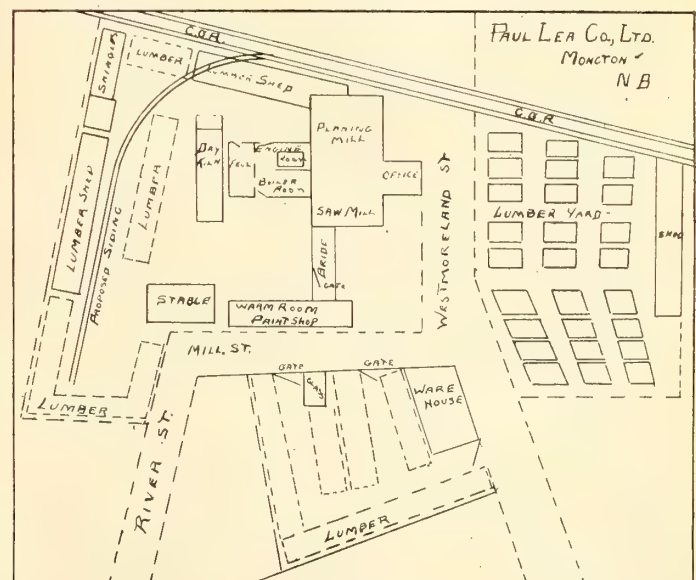
Mr. Lea is a hard worker and a good manager and under his skilful directing the business made steady and satisfactory progress, so that today it stands as one of the largest and best equipped woodworking plants in the Maritime provinces, devoted to the mak-

ing of church, store, office and house furnishings and building material of all kinds. The business was incorporated in 1905. The shareholders were confined to members of the family only.

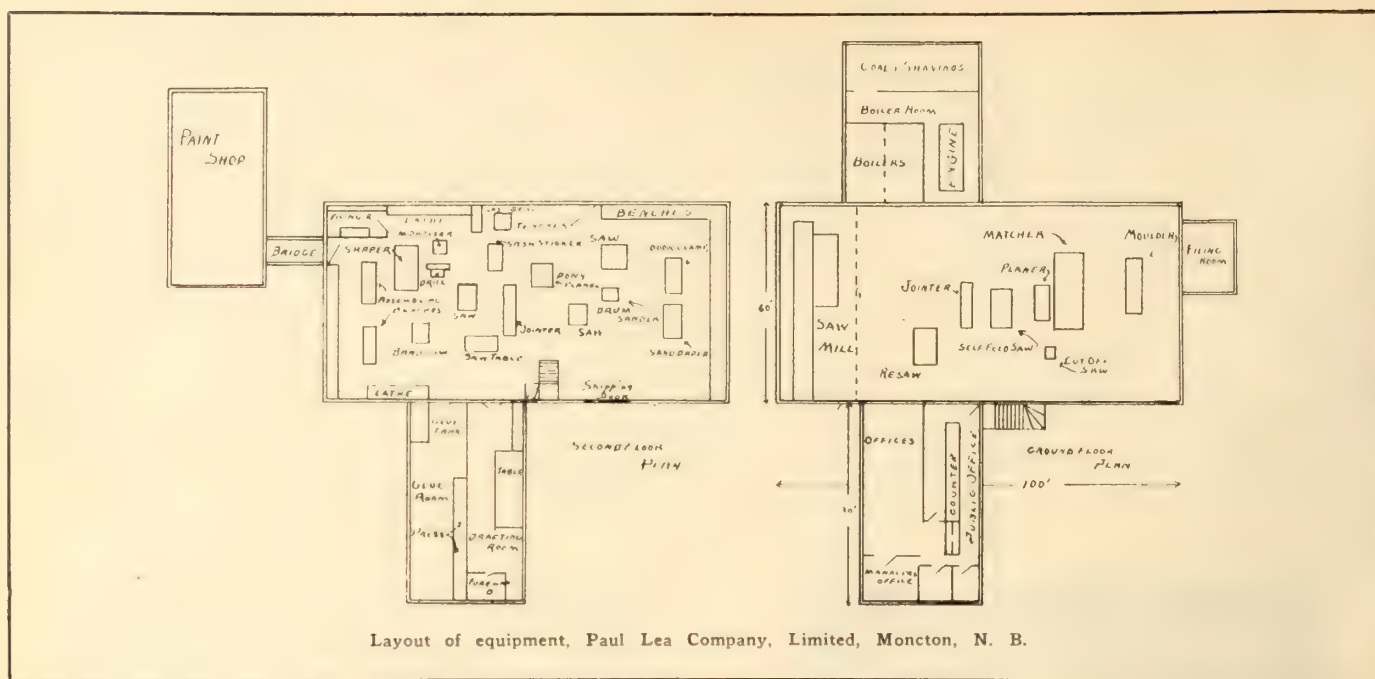
The plant occupies an area of about four acres and enjoys a good location. The Canadian Government Railway runs along the front of the property while the water shipments are handled on the river, which is but a few hundred feet away.

Included on the premises is the sawmill and factory, with a brick boiler and engine-room attached, in connection with the boiler room is a concrete shavings vault equipped with automatic fire doors: concrete faced dry-kilns, warming room for hardwood flooring with paint shop above, the latter being connected to the factory by an overhead bridge, stables, large three-storey warehouse, a number of sheds and store houses for dry lumber and other items. The warehouse is given over to the storing of finished material, the ground floor being devoted to sheathings and floorings, the second to mouldings and standing finishes and the third to sashes and doors.

The plant is very complete and up-to-date in every respect. On the lower floor is located the rotary sawmill, resaw, moulder, matcher, planer, jointer and



Layout of Plant.



power feed rip-saw. The second floor is devoted to lighter manufacturing, the following machines being used, shaper, two lathes, mortiser, drill, tenoner, band-saw, four saw tables, planer, jointer, two sanders and a number of sash and door clamps. Over the main office are the well equipped glue and drafting rooms. Power is derived from a 200 h.p. steam engine. These machines are all of the latest patterns and are being constantly added to from time to time. Mr. Lea makes a consistent study of both local and foreign mills and puts into effect all the newer and efficient ideas. To eliminate as far as possible, all accidents every safeguard possible is used on each machine, with the result that not one serious accident has occurred in the factory during the last fifteen years.

About sixty hands are employed and five trucks

are kept busily engaged in delivering the work. Everything possible has been done for the convenience of the employees. Cloak, toilet and washrooms for both the office staff and workmen have been installed on the first and second floors.

The sawmill in connection with the plant annually cuts about 500,000 feet of logs. The amount of lumber carried for manufacturing purposes is usually in excess of a million feet and they can supply a grade of stock, both rough and manufactured, that it would be hard to surpass in Eastern Canada for quality and workmanship.

One cannot meet the manager, Paul Lea, without being impressed with his sincerity and earnestness and his desire to live and let live.

Furniture of the Renaissance Period

New and Attractive Designs—Good Proportions and Ornamentations—Architectural Design Replaced—Many Masterpieces Handed Down.

Renaissance is a term used to denote a space of time and a certain phase in the development of Europe. It implies a reaching out and a breaking away from the narrow views of that time, a striving after that which is aesthetic and beautiful. The period was marked by a revival of learning, and produced a new interest in Greek and Roman antiquities. While European in scope, it reached its highest development in Italy. During that period the entire nation seemed to be endowed with an instinct for the beautiful, and seemed to be able to reproduce it in every form. While much of his inspiration came from the Greek, the Italian designer did not copy anything slavishly.

The Renaissance craftsman build upon secure foundations—the experience of his predecessors, a thorough understanding of the fundamental principles of design, and a native instinct for the beautiful. An important lesson may be learned from the way those ancient designers clung steadfastly to tried and true

principles. When these principles are forgotten and man cuts loose in a search for something different, he comes to grief. It was so in the extravagant Louis XV period, in the latter years of Chippendale and Sheraton, during the Victorian era and in the craze for mission and art nouveau, to which we succumbed a few years ago. The periods of decorative improvement have always been those of classic revival—the Renaissance, Louis the XVI. and the Georgian. There are happily indications today of a modern tendency to learn this lesson.

Proportion for Pleasing Effects

Long ago men learned that intervals in music which compose the scale and certain rhymes, produce pleasing effects upon the human ear. No decorative designer may hope to succeed, if he fails to comprehend and to feel those principles of proportion and arrangement of ornament which experience has shown to produce pleasing effects upon the eye.

It was this feeling for proportions and design which guided the craftsmen of the Renaissance period and which makes their works worth reviving, copying and studying.

Symmetry and balance and perfect proportion distinguish the best of the furniture of the Italian Renaissance. Proportion is governed by mathematical rules, yet is a thing to be felt rather than taught and is hard to describe. The craftsmen of this period felt it and manifested it, and the proportions of their work is capable of setting up a pleasurable reaction in those of us whose sense of appreciation is alive to such influences. If one studies a fine piece of Italian furniture it will be found that there is an intentional relation between the different dimensions.

Next to the sense of proportion, the craftsmen possessed an eye for design. He had an instinct for dividing his spaces in a manner calculated to produce the effect of grace, and embellished them with just the right amount and character of ornament. This ornament varied from the plain to the lavish, but it was seldom crude and stiff on one hand, or overdone on the other.

The best workmen, like the true craftsmen of any period, were painstaking in their work. The perfection of their workmanship and construction has seldom been surpassed. They took their work seriously, made cabinetmaking an art, and their work deserves a place among the masterpieces of all time.

Architectural Gradually Replaced

Carved woodwork became the vogue in the interiors, and furniture design followed this lead. The furniture was nearly as architectural in type, at first, as the Gothic. Then the furniture designer introduced new forms and a greater individuality. The furniture became more movable and was placed less stiffly in the rooms.

Form was considered of primary importance, but it was in the ornamentation that the Renaissance period found its fullest expression. In this matter of expression, carving assumed the leading place and some of it was wonderful. The standard of workmanship was high. In type it varied widely. Some of it was purely classic, some architecturally stately, and some extremely ornate. In the best examples it is well executed and tastily placed, and calculated to ornament, rather than to obscure, the form. Oak, which was the wood most commonly used, was partially abandoned, and walnut, chestnut and other woods were employed.

The decorative styles lagged and Gothic detail persisted until the classic revival of the sixteenth century. Mythological, allegorical and historical subjects became popular, as well as that skillful combination of purely decorative scroll work and pictorial form that we come to associate with the style of this period. Many of the details were of classic derivation and included the fret, the arborescue, the anthemion, the scanthus, the scroll and the forceful half human forms. Much of the arrangement of these details was new, including panels filled with delicate bass relief work.

Pearl and Ivory for Decorations

Part of the furniture of this period was decorated with inlay. Ebony inlaid with ivory and bone, sometimes engraved, was very popular. Toward the end of the 14th century, the Italian workmen began copying marble mosaics by means of natural and dyed woods, and iron. All sorts of designs were wrought

in this medium. At first geometrical and oral, and later elaborately pictorial. Some of the patterns were picked out with ivory and mother of pearl, and lined with metal threads. Ivory was also carved and applied in bas-relief, or inlaid in intricate arabesques.

During the sixteenth century, the Italian metal workers were at the height of their development and coffer, chests, and other pieces of furniture were mounted with beautiful wrought steel, iron, brass and bronze.

The cabinet, which was the most important piece of furniture in the home of that period, was very imposing. It was a thing of dignity. Richly carved or inlaid, these cabinets often displayed great magnificence and artistic skill. They were decidedly architectural in form, having at times steps and columns as of a temple. Their chief charm lies in the perfection of their lines and the beauty of their armament. At first they were a bit stiff, but those in the sixteenth century show considerable grace and variety.

The conventional forms of high back chairs, usually with horizontal carved slats in the back, were often stiff but stately, handsome in their carving, with flat square seats and arms. They were not graceful and could hardly have been considered comfortable. They are splendid examples of fine workmanship. It is the "curule" form of chair, often referred to as the Savonarola or Dante chair, that attracts us more strongly on account of the grace and beauty of its lines. It was a smaller, more comfortable chair, fashioned after the Roman model, in the form of the letter "X," and was frequently constructed as a folding chair. Its curves are graceful, proportions pleasing, and it shows a genuine feeling for design as applied to usefulness.

The Mansi or ante-room chair was a product of



China Cabinet by The Strathroy Furniture Co., Limited, Strathroy, Ont.

the latter renaissance period. It was neither comfortable nor graceful. Its chief interest is historical, as it did not do its designers any special credit.

Oblong Tables with Heavy Consoles

The best forms of table have survived to this day. The typical form is oblong, supported at the ends by solid carved and shaped supports or consoles, often terminating in claw or scroll feet, and usually connected by a heavy stretcher or shelf. Smaller supports sometimes rest in the form of an arcade on this shelf. This form was pretentious but the proportions were good and the table was well adapted for use.

Some of the best work of the period is to be found in the coffers or chests, particularly the marriage chest. They are found in numerous forms, having both curved and vertical lines, but nearly always exquisitely carved and ornamental. Some were carved with scrolls and figures, while others were painted and gilded. The beds, though heavy compared with

what we are accustomed to, were considerably lighter than any that had been used before. Well executed columns support a canopy of wood, brocade or tapestry, and the result was usually stately or graceful. The elaborately carved buffets often display the finest workmanship and the most delightful lines. Later forms, though in greater variety, were not as desirable in workmanship or design—serving tables, sideboards, bookcase and desks.

Not all furniture of the Italian Renaissance period was of good design, so that a person wishing to reproduce any of these lines should make a careful study of his subject, and make sure that he selects a piece that is attractive for its grace and beauty. Some of the pieces have never been surpassed during any period since. In giving credit to these master Italian craftsmen, it must be borne in mind that they were working out new designs and following new instincts or skill into new fields, so that the results achieved are all the more remarkable.



Buffet from a new dining suite by The Strathroy Furniture Co., Limited, Strathroy, Ont.

Tasty Furniture for the Soldiers Home

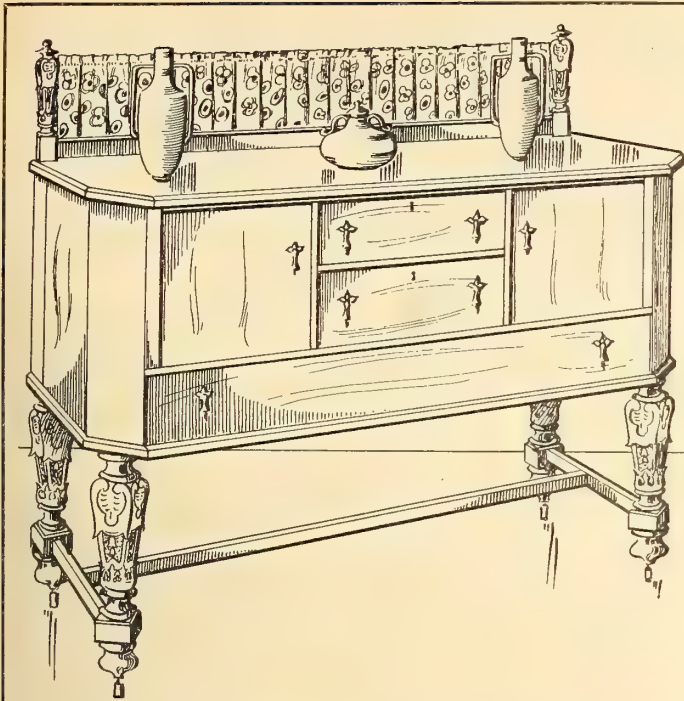
Years of Drab Surroundings Developed a Desire for Real Home and Bright Colors—Flowered Curtain to Replace Mirror—Combination China Cabinet and Serving Table.

By H. B. Beattie

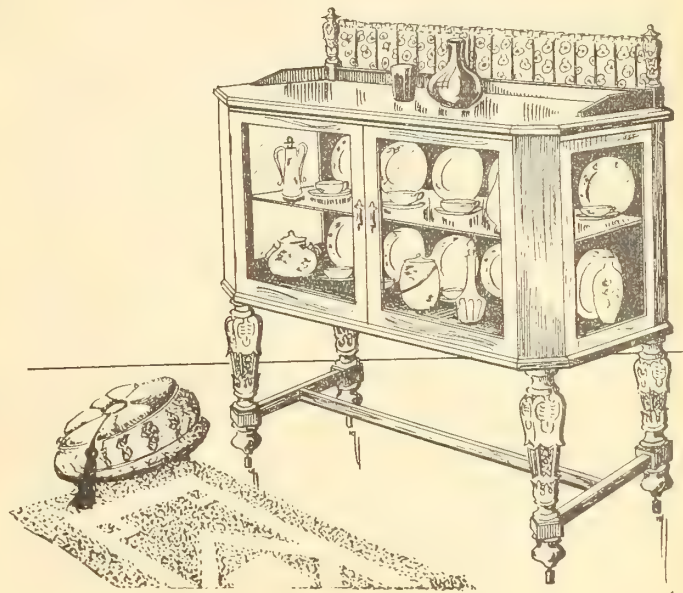
Thousands of men here in Belgium and France are daily picturing their cosy "homes to be" when they eventually return to Canada. How they shall arrange the different rooms; whether it will be in a city apartment or town cottage, and so on. No matter where it will be there must be a warmth of healthy color—color, yes that's what they want after all these months of the usual drab surroundings, relieved only occasionally by a bit of painted camouflage. Those soothing little touches a woman can give a home with a splash of color here and there; a flowered cretonne covered easy-chair, a gaudy cushion, fussy things over the window curtains, and a thousand and one little "pats."

These things have all long been denied the soldier.

Three to four years of living in the mucky trenches, stuffy dugouts, leaky barns, cellars or in tiny bivvies out in the open and built of anything from petrol cans to empty shell boxes has greatly stimulated the desire for a real home equipped with useful and tasty furniture. It must not be taken from the foregoing remarks on the past mode of living, that the artistic sense has been impaired; rather it has been developed I would say, for have they not seen how people of other countries arrange their home interiors? Yes, and it follows that many of these impressions will be transplanted to Canada. Those "story-book" ivy covered cottages of



Buffet showing mirror replaced by draping.



Combination serving table and China Cabinet.

Surrey, with their rose-gardens, a regular riot of color nearly the whole year 'round. The homes of the French and Belgians, a vision of white-washed walls, red tiled roofs and hollyhocks—a delightful color harmony never-to-be-forgotten.

Why not carry the same idea of color scheme further and put a flowered curtain on our buffet and serving table? With this idea in view the accompanying sketches of a dining-room suite are submitted. No attempt is made to give actual dimensions, this is left to your better judgment.

Material, oak; finish, fumed oak, and fumed properly, not applied with the brush and stain method. The desired shade will only be obtained by running the white stock through a scraping machine, and avoiding the use of sand-paper entirely.

The buffet to have, in place of the usual useless

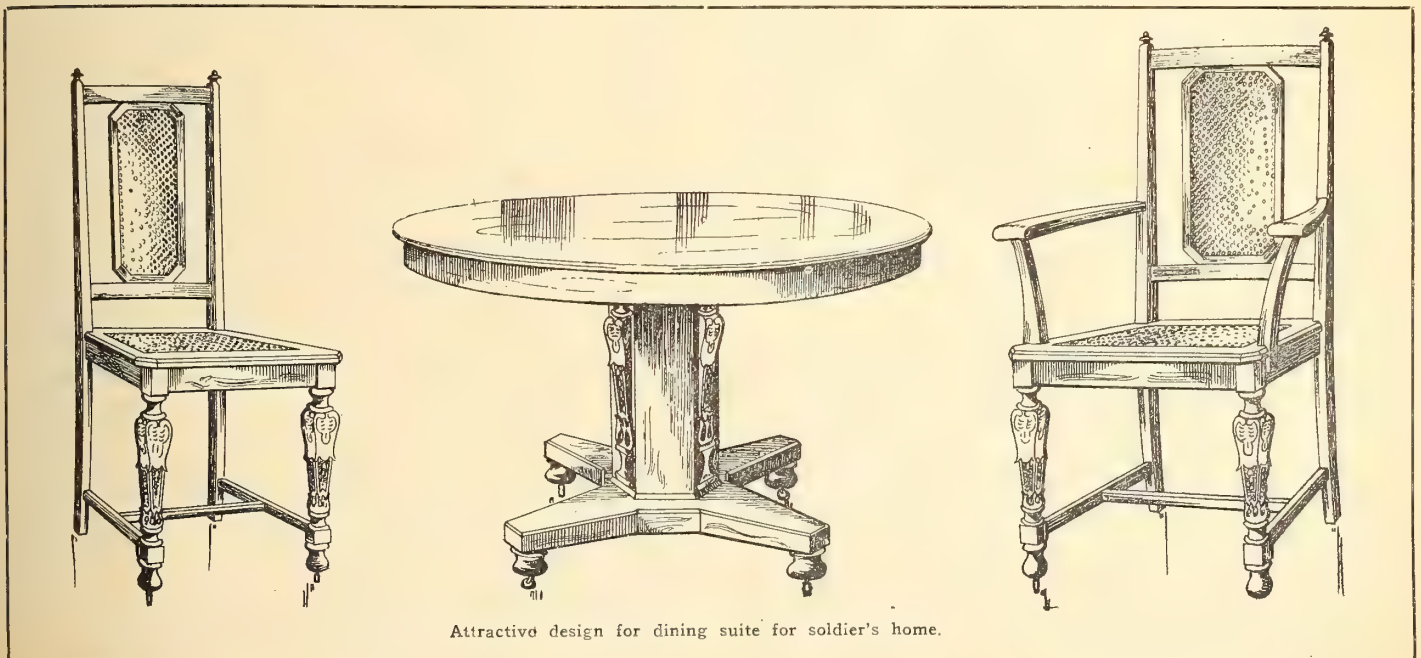
mirror, two neatly carved standards, supporting a light brass curtain rod. Curtain to be of same design and material as used in the general decorative scheme of the room. The arrangement of doors and drawers can be seen in the sketch.

The serving table may well be combined with a china cabinet. It could have a plate-glass top under which a piece of the colored material could be laid; or with a plain top and curtain as shown. This should make a very attractive combination.

The table; round top, extension, octagonal pillar with half carvings as shown.

The chairs, substantial and attractive, cane seat and back, or three or four bannister rails in backs instead of cane.

Finish and workmanship should be of the finest, for such is the hall-mark of real value.



Attractive design for dining suite for soldier's home.

Trade News of the Box Industry

Box Manufacturers' Convention in Chicago

The twentieth annual convention of the National Association of Box Manufacturers held in Chicago on April 9, 10 and 11 was well attended. An interesting programme had been prepared and instructive addresses were given on the different questions confronting the box industry.

The following extracts are taken from the different addresses that were delivered. Costs have not declined sufficiently to warrant a revision of prices downward. As stated previously, the fundamental trend of prices is downward, and it would be useless for us at this meeting to take any stand against any price reduction. If there is any one of you who is selling his product at the high prices prevailing during the war period, I would suggest that it might be a good thing to reduce values more on a level of present business conditions. There might be some slight reduction in lumber, but the idea of reducing wages might have a detrimental effect on our business. Some industries have advocated a general reduction all along the line in prices. That might be logical and reasonable in some lines, and I leave the matter for your consideration. What the public needs is stabilization of prices.

"While some grades of lumber may have been reduced a little, some other kinds have advanced, so that our material has not been reduced in price sufficiently to warrant any recession in the price of boxes. I have not heard of anyone reducing the wages of labor. Labor has declared itself and will not suffer any reduction in the wage scale owing to the high cost of living. Labor is not working as many hours now as during the war period, and this has had its effect on your overhead expenses, but I think it would be unwise and unfair to reduce wages while living is so high.

The Question of Standardization

"Next comes the question of standardization and stabilization, so that we can have a basis on which to sell our product, which will be nation-wide and give assurance to the user of boxes. As it is now we tell our customer he is not paying any more for his boxes than his competitor, but this argument could be eliminated by having a stabilized price for certain standards of boxes. In other words, having a basis for making our sales which will be a guide for our industry in marketing our product. In regard to the base price of steel, anybody who knows the alphabet is aware that he is not paying any more for steel than anyone else. That is true in some of the lumber associations, I believe.

Open Price Plan

"The open price plan has been the subject of many discussions before this body—it is not a new question—it has been adopted by many of the live organizations of the country, and, in fact, has been installed in a number of the local organizations of box manufacturers affiliated with the National. It is through a plan of this sort that the box manufacturer may ascertain the actual going prices in his territory. Members of local organizations where open price plans have been installed are very enthusiastic over the results obtained.

Our experience has been that the open price plan tends to stabilize the market and usually to raise the average selling price in that market. It is of particular benefit to the smaller manufacturer, who is not equipped with an organization to keep in constant touch with changing market conditions.

It is my hope that we can develop, through the National Association, an interchange of open price plan reports between the various local organizations, compiled in such a way as to show the general level of prices and to give each manufacturer a bird's-eye view of sales throughout the entire country.

Cost Accounting

"The prime object of cost accounting may be stated as follows:

1. To create a common basis upon which each individual business can make an intelligent comparison of its own results with those of other businesses in the same industry.
2. To establish standards or ideals by which each individual business can, through comparison, determine its own degree of efficiency or inefficiency in each particular phase of its efforts.
3. To develop the best possible accounting practice for each individual business of the industry.

Cost accounting has been and it should be a favorite topic of discussion at conventions.

Trade Extension

"The wooden box has for years been sold without extensive advertising, apparently on the theory that advertising would not pay the manufacturer. Suppose the wooden box was the only rectangular container on the market, even then advertising might be advisable, for many shippers using bags, bales, pails, barrels, baskets or some other type of package might be induced to substitute the wooden box as the more efficient container. Further, commodities shipped in bulk might to better advantage be shipped in wooden boxes. The problem is to convince the shipper and the consumer that the wooden box is the best container in which to pack his goods.

"But the wooden box is not the only rectangular container. There are others competing with it, not the least of which is the fibre and corrugated package. The use of the fibre or corrugated package is of comparatively recent origin. The manufacturers of those packages originally had difficulty in introducing them for use in this country. The public was prejudiced against the paper package and that prejudice had to be overcome. The demand for the paper package did not come normally or naturally—it was created by an extensive advertising campaign reinforced by the personal efforts of a horde of energetic salesmen.

"No effective action has as yet been taken by the wooden box industry to prevent the increasing inroads of the substitute container. All things considered, the wooden box is the best container yet devised by man. We know it. We must make the public know it. We must not let them forget it. We must advertise. We must, by a campaign of education, create a popular demand for better containers.

The wooden box industry should advertise through carefully selected channels, emphasizing the advant-

ages of the wooden box over the substitute container, which advantages more than offset the difference in cost, the difference in weight, the difference in any other alleged advantage of the substitute. We must prove to the public that the wooden box is the better container; that its good points warrant the increased investment over the poorer substitute. We must emphasize every point of advantage of the wooden box, not even overlooking the second-hand or salvage value."

Openings for Box Shooks and Barrel Staves

According to the advices received by the Canadian Trade Commission there appears to be an excellent market in Mexico for Canadian box and barrel shooks.

A few years ago Canadian manufacturers commenced shipping in competition with American exporters, from the lumber region of the Mississippi and Louisiana, but owing to war and other conditions there has of late been scarcely any trade. At present there is renewed activity and a heavy movement in the mineral oil industry, in which the refined article is barrelled. As many as five and six thousand tons of shooks are used by one operating concern. The British Board of Trade in Mexico states that at present there is only one small Mexican firm competing with the import trade.

China also offers a market for shooks for barrels and casks. In 1917 the imports in this line amounted to \$1,000,000. The bulk of this material was shipped by the United States and Japan. The barrels are used chiefly for the shipping of bean and other vegetable oils. Hankow and Daireir are the chief importing centres.

The shooks are received in bundles, every stave being numbered and the pieces necessary for each barrel are wired separately. This enables the Chinese cooper to assemble the barrel quickly and without any undue loss of time.

Sizes of Fruit Baskets Change Sept. 1st

During the past few months there has been considerable difficulty in reaching an agreement as to the specifications of the new standard six and eleven quart veneer fruit baskets. This has meant an unavoidable delay in commencing their manufacture and has made it necessary to allow the use of baskets of the old sizes during the coming season. Manufacturers have, therefore, been advised that they may continue to make these until September 1st next, after which date only baskets of the new dimensions, which have been finally agreed upon, may be manufactured.

So far as the use of the old baskets by fruit growers and shippers is concerned, there are no restrictions. They may be used until the supply now in stock, or which may be manufactured up to September 1st next, is completely used up.

The necessity for arranging at an early date for a reasonable supply of fruit packages will be quite obvious to all fruit growers, as it will permit the manufacturer to meet the increased demand should the crop be above the average of the past few years. In past years, when the crop has been large, difficulty has been experienced in obtaining sufficient packages to market it to advantage. This difficulty will be removed if growers will place their orders well in advance of the harvesting season.

Need of Uniform Cost Accounting in Box Factories

The following is the reply of a prominent Western box manufacturer, when asked by the "Canadian Woodworker" for his views on a uniform cost accounting system for the Canadian box industry.

"We have read many articles in box periodicals but have not been able to incorporate any suggested system into our particular plant. Conditions differ with locality. Take the lumber as it comes to the resaws or planers. The cost of running this through and into box-shooks depends much on the quality of lumber used. Some boxmen run the whole log into box lumber, including clears; other mills use clears for other purposes. This would obviously create a difference as to percentage of waste and also in cost of manufacture.

"Many mills have the latest and fastest equipment. It would be disastrous for a mill with poorer and slower equipment to imagine they could produce boxes at the same cost as the better equipped mills.

"Being in the forest, as we are in British Columbia, we use much wider lumber or boxes than is used in the East. It is apparent that the cost of manufacture is less, for example, where one piece is used for the side of a box instead of three pieces.

"In Eastern Canada the cost of a much poorer grade of lumber is higher than the log run of lumber on the Western Coast.

"Some mills with us calculate their waste in converting lumber into boxes to be twenty per cent. Others ten per cent. The foolish box man makes no allowance at all for waste. We recently ran across quite a pretentious box plant who value the cost of their lumber as at the cost of the log and they run the whole log into box lumber.

"We have had neighbors who assured us that their cost of manufacturing lumber into boxes was \$2.50, when at the same time our cost was \$6.50.

"It is always the last man in the box business who so seriously under-estimates the cost of manufacture. To the new man it is all so easy and inexpensive, just cutting up lumber, that's all."

From the foregoing remarks, it would appear that a uniform cost accounting system is badly needed in this industry. The boxmaker who figures his manufacturing costs at \$2.50 per M. feet, is quoting in competition with the manufacturer who knows that it costs him \$6.50 to cut a thousand feet of lumber. Much of the cut throat competition now encountered, would be eliminated if an accurate system of figuring costs were adopted.

Cost accounting creates a common basis upon which each individual manufacturer can make an intelligent comparison between his costs and those of others engaged in the same industry. It also tends to act as a stimulant, for the efficiency of a plant or system can best be judged by a comparison of the results it achieves with the results secured by others.

[We would like all box manufacturers to send in their views and suggestions on this and other questions of interest to the trade.—The Editor.]

Are you careful in leaving the factory at noon and in the evening? It pays to be careful always especially on the stairs. Avoid crowding and shoving as accidents cause much suffering and loss of time and money.

Sparks and Filings in the Saw Room—No. 3

Successful Operation of the Band Resaw—Tension Must Be Kept Uniform—
New Saws Should Be Checked Before Placing on the Wheels

By Edgar Usher

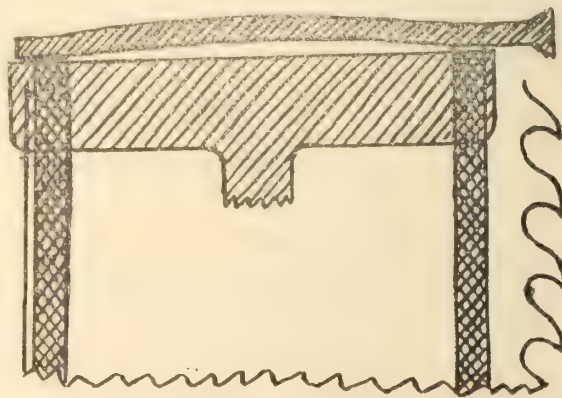
The tensioning of band saws is, no doubt, the most particular part of a saw filer's work, and expert work cannot be accomplished after a few short lessons or even a lengthy practice. It requires many years of study and experience to become a competent filer. It is obviously impossible to learn it without actual experience in the filing room. It is not the object of these articles to teach filing, however, but rather to enable filers to locate and overcome difficulties.

It is absolutely necessary after a new saw reaches the customer for the filer to go over it thoroughly, before putting it on the wheels, as the tension is frequently disturbed in transportation. This is something some filers neglect, but it is really a matter of the first importance, not only to the life of the saw but in preventing trouble the saw may otherwise eventually give the filer.

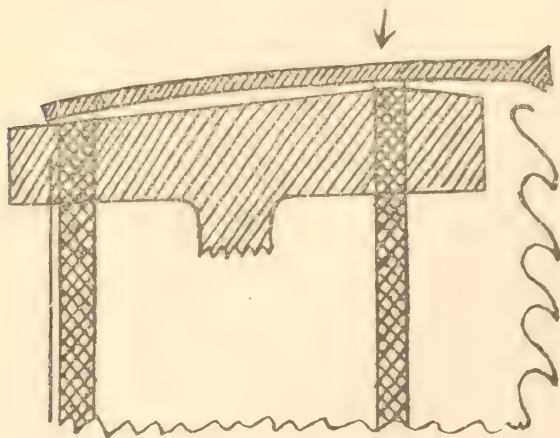
A new saw should be looked over very carefully, and the tension adjusted to suit the particular mill and filer. After this, and as it is only a few minutes work to change saws, a wise filer is one who will run a new saw for only an hour or so, change it, and again go over it carefully. He will very often find the tension changed, for a saw will stretch a good deal in the first few hours running, and this will of necessity cause a change in the tension.

Manufacturers who operate band mills would save themselves a good deal of money if they would, themselves, see that this is done when the mill is provided with new saws. If a new band saw is tensioned properly, put on the wheels for two hours, taken off and peneched again, then given about a four hour run, and again carefully looked over, it will seldom develop

as many varying conditions enter into the consideration of this important matter, and can only be decided by the filer on the spot. The speed of the mill, the amount of feed, and the condition of the wheels must be taken into account, and there is consequently no specific rule to be laid down here for guidance. Each mill has to decide this point according to its special requirements. These varying conditions lead up to a great divergence of opinion amongst filers. Some carry a great deal more tension than others, and as there are no two mills which run under precisely the same conditions, the discussion of this subject need not



Properly tensioned saw on flat wheel.



How saw runs on worn wheel. Tire should be at edges.

crack of any kind in the first few runs, which, contrary to perhaps a logical supposition, is the period in which cracks are most likely to develop. It is fairly safe to assume that a saw which has developed cracks during the first run has been in some way abused, and most likely the abuse is in the form of too long a run for the first time on the wheels.

Amount of Tension Required Varies

The exact amount to be carried on any particular mill is a matter which cannot be specifically named,

be prolonged beyond showing that no standard can be set even for particular sizes and gauges of saws cutting approximately the same size and quality of lumber.

Some band mill operators and filers advocate the carrying of a crown on the wheels, usually about one sixty-fourth of an inch. This is perfectly good practice, although not as often resorted to nowadays as is in the earlier days of the band mill. But if such a crown is being carried on the wheels, it is, of course, necessary to carry more tension in the saw, and a greater swage to the teeth for clearance of the saw in the kerf.

It is, however, the writer's opinion that the flat wheel is the better practice, and as this requires less tension in the saws and consequently less hammering, there is apt to be less trouble from cracks, and the production of a higher quality of lumber.

Uniformity is the Chief Essential

The important thing to keep in mind is absolute uniformity of tension in the whole plate, for if any one part of the plate is tensioned to a lesser degree than any other, cracks will surely develop. In addition the saw is apt to run in or out and make bad lumber.

Filers sometimes complain that band saws develop cracks or make bad lumber after having been running smoothly and doing good work for quite a long while. Too often the saw is blamed, and responsibility thus shifted from the true cause. The trouble is not, in all probability, in the saws, and it is well to look for it elsewhere before making final decision. It is only natural that with the tremendous strain of the work being

done, through time, will begin to wear a crown, or in other words, the sides of the wheels have become worn down, leaving the centre of the wheels high or "crowned." This, of course, offsets the tension, with cracks as a result. Perhaps the journals have become worn, causing the wheels to become out of line, resulting in a cross line strain. Perhaps a shaft has become bent as a result of an extra strain, at some time, and while not immediately noticeable, still exists to the detriment of the output and the worry of all concerned. Again the wheels wear out of round through an uneven mixture in the iron forming a soft spot which wears down quicker than the rest of the surface. This makes a flat spot in the wheel's surface and throws the wheel out of balance, causing it to hammer and eventually resulting in cracked saws.

Cracks Caused by Unusual conditions

Band saws may even crack from no apparent reason. This should not cause undue alarm for when the enormous tension strain on so narrow a ribbon of thin steel is considered, it is not surprising that some temporarily abnormal condition of sawing, such, for instance, as a particularly large, hard knot, should cause a crack. If a crack, or more than one even, appears in a saw where cracks have not previously been encountered, it should not be immediately assumed that something is radically wrong, or that a remedy must be applied right away, for the crack may be from some such temporary condition, and may not occur again. It is better to merely treat the crack as an accident by stopping it from going further by means of centre punching the extreme ends of the crack as described in a previous article. In such an event, however, watch for a repetition of the trouble and if it should occur during the next run, there is evidently something wrong, and one of the afore mentioned irregularities may be located.

Many filers use the hammer too frequently. While it is, of course, necessary to use the hammer in levelling up, it should be used very little and the rolls substituted whenever possible. The effect of a hammer blow on a piece of steel is much the same as on a piece of wood, and too great or too heavy hammering will cry stallize the steel, by closing the molecules, making the saw plate hard and brittle, and cracks will be the result.

Let every blow of your hammer be well considered, and do not strike without a reason for so doing. Each blow is a shortening of the saw's life. The rolls should always be used in tensioning, since these simply elongate the molecules, and the saw retains its tensile strength; whereas when the hammer is used in tensioning it destroys the tensile strength and the elasticity of the steel as well. Be careful, too, that your hammers are properly ground. If the face of the hammer is too sharp, instead of levelling off the humps, each blow you strike will cause a cut in the steel, and the lump will require more frequent blows with a multiplying of the cuts.

Let the tension be uniform. If you are using six inch bands and carrying a thirty-foot circle, let it be thirty feet all the way round, not thirty in one place and thirty-five in another. Also let it be the same all the way across the plate, for without uniformity, you have fast and loose places which will give trouble.

Proper Use of the Guides

The guides are often used by filers to offset other defects in the mill by attempting to force, through pushing the guides against the saw, the saws into correct position, in relation to the cut. This is very bad practice, as the guides are intended merely to keep the saw in place under unusual conditions, when a particularly heavy strain is momentarily put on it by striking a spike or some such similar accident. The saw should run true without the assistance of the guides, and should run free of contact with them. Their use otherwise will only serve to develop trouble. They should be made of some kind of frictionless metal, babbitt metal being recommended and, indeed, used in most mills.

The back guard too should be free of the saw as this is only to prevent the saw running back on the wheels, and possibly off the wheels altogether, as sometimes happens. Should it happen, however, that the saw is forced, by the work, against the back guard sufficiently hard to cause case hardening of the edge of the saw, the remedy is to hold a piece of old emery wheel against the back of the saw, while it is in motion, for a few minutes, varying the position of the stone meanwhile to make the back of the saw round.

Hardwood Inspection Rules and Sales Code

Mr. B. F. Dulweler, in a letter addressed to the different Furniture Manufacturers' Associations, says in part:

"The American Hardwood Manufacturers' Association, an organization composed exclusively of manufacturers of hardwood lumber, feeling that there should be closer co-operation between the producers and the consumers of lumber, to the end that problems affecting both interests may be solved for their mutual benefit, passed a resolution at its meeting at Louisville, Kentucky, on December 18th, 1918, providing for the appointment of a committee to study the question of grading lumber, to secure the co-operation of the consumers for the purpose of evolving a truly scientific system of inspection that would minimize the waste in the utilization of lumber, and to work with the consumer in the solution of other problems that were of mutual interest.

"This association, in the near future, will establish

an Inspection Department for the purpose of administering its inspection rules, and giving such advice on matters pertaining to inspection as may be required."

In the February issue of the "Canadian Woodworkers" we published the sales code as adopted by the American Hardwood Manufacturers' Association. Below is the General Instruction as included in the new rules.

GENERAL INSTRUCTIONS

For the Manufacture, Inspection and Measurement of Hardwood Lumber

1. Lumber must be inspected and measured as the inspector finds it, of full lengths and width. He shall make no allowance for the purpose of raising the grade.
2. Exceptions to the general rules are stated under the caption of the respective woods.
3. Inspection must be made from the poor side of the piece, except as otherwise specified.
4. These rules define the poorest piece in any given

en grade, but the respective grades must contain all pieces up to the next higher grade.

5. In the following rules all widths and lengths mentioned are inclusive.

Manufacture

1. Lumber should be properly manufactured, trimmed and edged, of good average widths and lengths. It must be of standard thickness when shipping dry, with the exception that in the grades of Common, the percentage not included in the cutting may be scant in thickness, provided the cuttings are of standard thickness and that there is no greater variation in the thickness of the board than is allowed in the rule describing missawn lumber.

2. Lumber showing greater variation in thickness than $1/16$ in. at any point in stock cut $1/2$ in. thick or less, or $1/8$ in. in $5/8$ -in. and $3/4$ -in. stock, or $1/4$ in. in 1-in. to 2-in. stock, or $3/8$ in. in $2\frac{1}{2}$ -in. and thicker stock, must be measured at the thinnest part and classed as missawn, and graded and reported as such.

Minimum Widths

1. 90 per cent of the minimum widths mentioned in all grades of lumber must be full width; the remaining 10 per cent may be $1/4$ -in. scant in width.

Measurement

1. In the measurement of lumber of random widths, fractions of over $1/2$ ft., as shown on the board rule, must be counted up to the next higher figure; fractions of exactly $1/2$ ft. and less, as shown on the board rule, must be counted back to the next lower figure.

2. A board rule on which the $1/2$ in. is clearly marked should be used.

3. Tapering lumber in standard lengths must be measured one-third the length of the piece from the narrow end.

Tally

1. A piece tally in feet must be made of all lumber. All lumber of standard grades and thicknesses must be tallied face or surface measure, and this tally must be the number of feet, board measure, of 1-in. lumber. If the lumber is thicker than 1 in., then the tally so obtained must be multiplied by the thickness as expressed in inches and fractions of an inch. All lumber less than 1 in. must be counted face measure. When strips or stock widths are measured, a tally showing widths and lengths must be made.

Heart

1. Heart, where the extent or damage does not exceed the equivalent of standard defects allowed, will be admitted in the grade of Firsts and Seconds.

2. In the grade of No. 1 Common, no piece shall contain heart to exceed one-half its length in the aggregate.

Season Checks

1. Ordinarily season checks are not to be considered defects, but if of so serious a character as to damage the lumber they are to be considered by the inspector.

Splits

1. Six inches of straight split in one end, or its equivalent in both ends, will not be considered a defect in the grade of Firsts and Seconds.

Sap

1. Bright sap is no defect unless so stated under caption of the respective woods.

Stain

1. Stain that will surface off in dressing to the standard thickness must not be considered a defect.

Burls

1. Burls that do not contain knots or unsound centres shall not be considered defects.

Wane

1. In the grade of Firsts and Seconds, wane along the edge not exceeding one-sixth the length of the piece, or its equivalent at one end or both ends, not exceeding in thickness one-half the thickness of the piece, and not exceeding in width, as shown in the following table, is not a defect:

$1\frac{1}{2}$ in. in width in $1\frac{1}{2}$ -in., $5/8$ -in. and $3/4$ -in. lumber.

$3/4$ in. in width in 1-in., $1\frac{1}{4}$ -in. $1\frac{1}{2}$ -in., $1\frac{3}{4}$ -in. and 2-in. lumber.

1 in. in width in $2\frac{1}{2}$ -in. and thicker lumber.

Standard Defects

1. **One Knot** $1\frac{1}{4}$ in. in diameter.

2. **Two Knots** not exceeding in extent or damage one $1\frac{1}{4}$ in. knot.

3. **Splits**—In lumber of random widths, one split not diverging more than 1 in. to a foot, and not exceeding in length in inches the surface measure of the piece in feet; but not more than two defects of this character are admitted in a piece of the grade of Firsts and Seconds. Firsts and Seconds sold in any series of special widths 10 in. or wider will not allow more than one standard defect of this character in any piece.

4. **Wane** in excess of free wane allowed in Firsts and Seconds grade must be considered as standard defects in the proportion of 1 in. in width, one-sixth the length of the board, extending parallel with the edge, or its equivalent at one or both ends, as one standard defect.

5. **Worm, Grub, Knot, and Rafting Pin Holes**, not exceeding in extent or damage one $1\frac{1}{4}$ -in. knot.

6. **Heart** and other defects not enumerated as standard defects that do not damage the piece more than the standard defects allowed, are equivalent defects and must be so considered by the inspector.

DEFINITIONS

Cuttings

1. The word **Cutting** as used in these rules means a portion of a board or plank obtained by cross cutting, by ripping, or by both.

2. The term **Clear Face Cutting**, as used in these rules, means a cutting having one clear face and the reverse face sound.

3. The term **Sound Cutting**, as used in these rules, means a cutting free from rot and shake and other defects which materially impair the strength of the piece.

Good Edge

1. The term **Good Edge**, as used in these rules, will admit no unsound defects, excepting a slight amount of wane, not to exceed one-third the length and one-third the thickness of the piece, or its equivalent in other defects.

Standard Grades

1. The standard grades of hardwood lumber are found under the caption of the respective woods. Firsts and Seconds are combined as one grade.

2. The percentage of Firsts in the combined grade of Firsts and Seconds to be as follows:

3. Poplar, not less than 50 per cent.

4. African and Mexican mahogany, not less than 35 per cent.

5. Tupelo, plain and quartered sycamore, white ash, plain oak, chestnut, red gum, sap gum, cottonwood, black gum, magnolia, locust, hackberry, and willow, not less than 33 1/3 per cent.

6. Cherry, beech, soft elm, buckeye, quartered oak, quartered red gum, and quartered gum sap, no defect, not less than 25 per cent.

Standard Lengths

1. Standard lengths are 4 ft., 5 ft., 6 ft., 7 ft., 8 ft., 9 ft., 10 ft., 11 ft., 12 ft., 13 ft., 14 ft., 15 ft., and 16 ft., but not over 15 per cent of odd lengths are admitted.

2. In the grade of Firsts and Seconds the lengths are 8 ft. to 16 ft., but there must not be more than 20 per cent under 12 ft. and not to exceed 10 per cent of 8-ft. and 9-ft. lengths, except as otherwise specified.

Standard Thicknesses

1. The standard thicknesses of hardwood lumber are 1/4 in., 3/8 in., 1/2 in., 5/8 in., 3/4 in., 1 in., 1 1/4 in., 1 1/2 in., 1 3/4 in., 2 in., 2 1/2 in., 3 in., 3 1/2 in., 4 in., 4 1/2 in., 5 in., 5 1/2 in., and 6 in.

2. The standard thicknesses for surfaced lumber are as follows:

Rough		Surfaced
3/8 in.	surfaced two sides to	3/16 in.
1/2 in.	surfaced two sides to	5/16 in.
5/8 in.	surfaced two sides to	7/16 in.
3/4 in.	surfaced two sides to	9/16 in.
1 in.	surfaced two sides to	13/16 in.
1 1/4 in.	surfaced two sides to	1 3/32 in.
1 1/2 in.	surfaced two sides to	1 11/32 in.

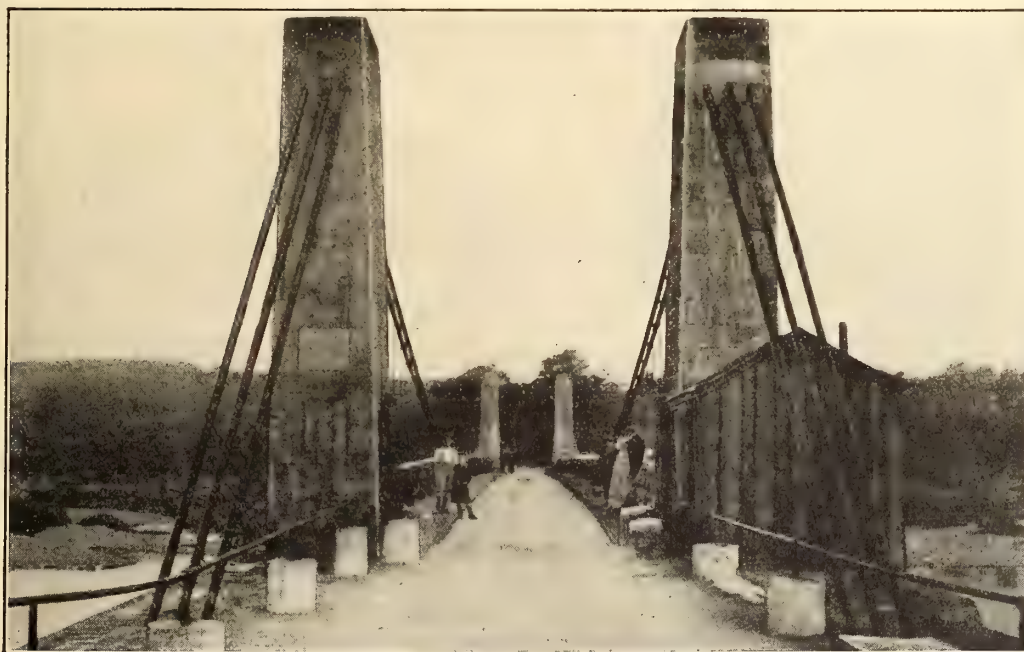
1 3/4 in.	surfaced two sides to	1 1/2 in.
2 in.	surfaced two sides to	1 3/4 in.
2 1/2 in.	surfaced two sides to	2 1/4 in.
3 in.	surfaced two sides to	2 3/4 in.
3 1/2 in.	surfaced two sides to	3 1/4 in.
4 in.	surfaced two sides to	3 3/4 in.

3. Lumber surfaced on one side only must be 1/16 in. full of the above thickness.

Overcoming Difficulties in France

The suspension bridge shown in the accompanying illustration has been in use for a goodly number of years. It is 350 feet from tower to tower and proved to be equal to all the demands of normal traffic. When the great allied guns and army trucks commenced to rumble across it, the French authorities gave warning that the bridge would not stand the strain of these unusual loads. As the French claimed that it would require six months to rebuild the structure, the Allies were confronted by a serious problem. The 28th American Engineers were delegated to the task of making the necessary changes and after making a careful survey of the bridge, surprised the French authorities by announcing that they could complete the structure in six weeks, instead of six months. The bridge was actually rebuilt in ten days.

The engineers worked night and day, employing three shifts of men. Green oak, cut and sawed in the vicinity was used. Each stringer was fashioned to correspond with extremely accurate specifications. The dimensions of the pieces were 6 in. thick, 14 in. wide and 22 ft. long, tapered at both ends to six inches. The beams were cut so accurately that they did not vary more than 1/8 of an inch. In accomplishment of such accurate work, it was necessary that fine tools be employed, Atkins Silver Steel saws did the work.



Bridge in France that was rebuilt in ten days.

With the Phonograph Trade

Canadian Made Phonograph Motors

Reconstruction development undertaken by the W. H. Banfield & Sons, Limited, Toronto, include the manufacture of phonograph motors, tone arms, reproducers and other accessories. An entire plant in the United States devoted to the manufacture of such products has been purchased and moved to Toronto. Production of these lines have already been entered on.

While a fair proportion of the output will be absorbed by the Canadian trade the export business when developed will likely take the greater part of the total amount produced. Australia, New Zealand, South Africa, Norway and Sweden are considered to be very attractive markets, while the Orient is looked upon as a field that offers tremendous opportunities.

It is hoped that all the demands of the Canadian trade can be supplied as formerly practically all motors and accessories were imported from the United States. The fact that it is to the advantage of every Canadian manufacturer to give a preference to Canadian made goods is too well known to need emphasizing.

Motors of seven types are being made. The production for 1919 is expected to run into large numbers.

In Phonographs Tone Counts

After all, in phonographs "the tone's the thing." One buys a phonograph to hear music, not squeaking. The following article in a current music trade journal would seem to show that people are discovering that it is better to pay a price which makes it possible for the dealer to turn over to them a machine of guaranteed durability and tone purity than to only consider the lowness of the price.

The article referred to says: "An interesting and significant phase of the talking machine industry is the relatively small demand for the very cheap models. The progressive development of the business has been in the better grades. The public has developed a critical and discerning attitude toward the phonograph it proposes to place in its home. Prospective purchasers know something about what they want in tone reproduction, and realize that they must pay the price to secure an article of musical and architectural merit.

"Manufacturers and dealers, who a very few years ago were catering to a twenty-five-dollar limit, soon realized the blunder. There is probably less effort today to sell a two-hundred dollar machine than to persuade a buyer to decide on one priced below fifty dollars. The development of any industry is not dependent up on regularly lowered prices, but in adding refinement and improvements, and this has been the making of the phonograph business.

"Undoubtedly the future holds out greater promise and greater encouragement than at any previous period in the history of the trade. The war's effect on the phonograph is to stimulate the demand for it. All the way from training camp to the trenches and back again to the hospitals, music has been in universal demand. Pianos and players have been put at the disposal of the soldiers, but, naturally enough, the phono-

graph has been the universal musical instrument, and men who, either through disinclination or lack of opportunity in civil life, took no interest in the phonograph, have become enthusiasts. The influence of these men alone in the home life of Canada will give music the greatest impetus it has ever had."

The Phonograph and the Piano Business

A prominent Toronto piano dealer when asked by the "Canadian Woodworker" if the popularity of the phonograph did not have the effect of reducing piano sales said that in his experience exactly the reverse held true. Pianos were in a class by themselves and anything that tended to elevate the musical tastes of our citizens or to create a desire for good music increased rather than diminished the sales. In his opinion the two lines were complimentary, each helping the other. He went on to recite instances where he had sold a phonograph to a family that did not have a musical instrument of any description in the house. The love of music that the phonograph had created in the members of that family, resulted in a desire to give the children music lessons. A piano was needed and sold.

Another instance related was the case of a business man who while fond of music, had never had the opportunity to learn to play. He had purchased a phonograph and thoroughly enjoyed the music. However, the playing of records did not entirely satisfy him and it was not long before he returned and purchased a \$1,200 player piano.

These are not isolated instances but are occurring often enough to convince this dealer that what tends to increase the sales of the phonograph will have a very beneficial effect on the piano business. His opinion was that the phonograph and the piano business were both entering on an era of great activity and popularity.

General Woodworking Conditions

All reports from the Maritime Provinces state that business is good in that part of the Dominion. The sash and door factories are running at full time with the usual number of employees. The box makers are active while the brush and broom factories are calling for more hands. Conditions among the woodworkers were fair in the Montreal district, while Quebec reports that the sash and planing mill trade dull with the box and broom factories running full blast. Other parts of the province are enjoying a good demand. In Ontario conditions are good as a rule. The furniture makers are looking for more skilled workmen. The piano factories are meeting with an active demand with a slight shortage of skilled labor. The box men are not so busy, at Chatham the box factories being practically idle, while at Windsor the box trade is quiet. The Manitoba sash and door men report a good business, in Saskatchewan trade is not quite so brisk. All branches of the industry are enjoying a fair trade in British Columbia some of the box factories having increased their staff. In Victoria the wooden shipbuilding is very active.

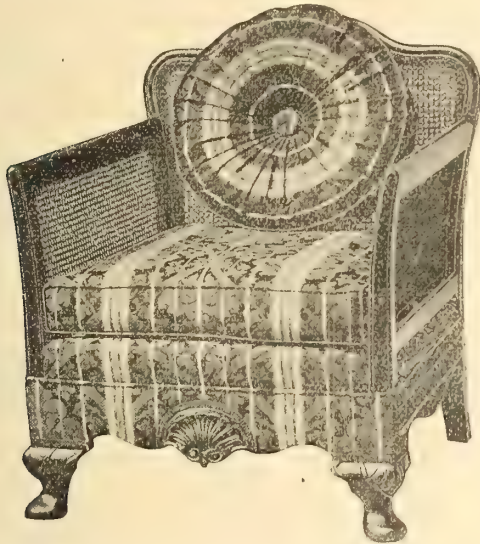
Upholstering and Trimming

Coverings for Period Furniture Beautifully Figured Tapestries—Stripe and Medal- lion Silks and Satins—Horsehair and Leather

By D. C. Stephenson

Furniture owes no little of its attractiveness and distinction to the materials with which it is covered. The dainty creations of Hepplewhite and Sheraton, and other popular forms of period furniture, are at present enjoying a new vogue, and these forms of furniture, with their different lines of upholstery, are being reproduced by many of the leading furniture makers of today.

When the original Louis XV. style was still enjoying a large measure of popularity, the coverings



Period chair. H. Krug Furniture Co., Limited, Kitchener, Ont.

chiefly sought after were fine tapestries from Gobelins, Beauvais, and Aubusson manufactories, representing Aesop's fables or pictures from Watteau, velvets, damask with floral patterns, silk brocaded in colored flowers, and lastly, Persian, a kind of chintz with bright designs on a light background. Tapestries were in great demand during the time of Louis XVI., when the airy, graceful pictures of Boucher, Fraonard and others were copied and worked out in all their beautiful detail on light backgrounds.

It was an age, in design, when such subjects as shepherds and shepherdesses, children at play, garlands, baskets and vases of flowers, cupids, birds and pastoral scenes were chosen and reproduced. Later the demands for the stripe became more insistent, and stripes appeared in every conceivable form and color combination. The introduction of the stripe was very gradual. At first, they were found hidden under other subjects, but it was not long before they became more popular than any other form of ornamentation for use in designs for upholstered coverings. All other designs lost favor and were ignored and the stripe almost completely usurped the place

of the subjects that were formerly used. In fact it was so fashionable at that period that it was not only found on the sofas, chairs and other furniture, but was used to a large extent for the clothing of the dandies of that day.

A design known as the "Dauphin," in honor of Marie Antoinette, was introduced in 1770, and was used extensively. It consisted of winding ribbons alternating with stripes and flowers. Another popular figure was that of a combination of the feather and stripe. Braids were used as a finish for the seat, while tassels and ball fringes were also in common use.

Hepplewhite showed a great partiality for the stripe. He preferred that to any other design when recommending silks and satins to be used on his drawing and living room pieces. He also liked floral designs when worked on light backgrounds, and oval medallions, printed on silk, so as to harmonize with the ovals of his mirrors and the graceful tapering lines he embodied in his furniture.

For his dining room chairs he preferred blue or red morroco leather, using a brass-headed nail for a fastener. During that period what was known as Gauffered leather was in demand. This term was applied to heavily carved or embossed leather. Horsehair, either plain, figured or striped was used to a considerable extent.

Sheraton was familiar with all the designs that



Louis XVI. chair with Beauvais Tapestry.



An attractive settee. H. Krug Furniture Co., Limited, Kitchener, Ont.

were so popular in France at that period. In addition he brought out many new ones of his own creating. His festoons, rosettes, puckerings, foldings, loopings, etc., were so elaborate that he found it necessary to give detailed instruction to the workmen before he was able to secure the results that he desired. He clung to the stripe and oval medallion for his furniture until upholstery gave way to cane. Many of Sheraton's pieces are found with a combination of cane in the back and upholstery on the seat.

The Upholsterer a Specialist

By W. O. M.

Dusk was creeping slowly in the shop and the tired upholsterer sat on his stool before his workbench and looked over the almost finished product of his hand.

He was proud of the masterpiece he had created; every line was in harmony with the whole, a delicate fineness of outline, a gracefulness of curve, a smoothness of finish, a nicety of pleats, called for appreciation—yea for admiration and praise, of which he in his long life only had received a scant supply, and when he thought of the many years of faithful and painstaking apprenticeship he had spent in order to learn all the details, he wondered if it was worth the while.

We hear of great sculptors and painters whose names live forever, men who with the imagination and an eye for color harmonies could create living things. We read of the carver who with his chisel cut out the magnificent beauties of pulpit and altar in the old cathedrals, we speak with admiration of the builders and the workers in iron, steel and glass—but who ever heard the name of a world-famed upholsterer, artist though he may have been, keen in the selection of harmonious colors, graceful in his outlines and creator of beauties that would rival the skill of a great master.

Is it worth while, then, to spend our days and years in an evergrowing desire to create beauties that will be but for a few fleeting days and then forgotten, or is our aim only to make a living the best we know how.

Specialize in One Operation

If the latter is the fact it were better if we pay greater attention to specializing and thereby gain greater efficiency, greater speed and lower cost of production. Specializing is the great need of the age. Who thinks in these days of a man making a wagon by hand

like they did fifty years ago, or who imagines one man cutting a chair out of the rough lumber by hand.

Why then should an upholsterer go through all the processes that are needed from webbing to lining. This may be necessary in small shops, but in the larger shops it would be far better for every man to be a specialist in one or two lines rather than spending half a lifetime learning a complete trade.

How little advancement has been made in the art of upholstering, how few inventions to make it easier and more pleasant for the worker. With wonder we ask ourselves the question whether in all the realm of upholsterers are there no inventive geniuses.

True the tufting machine has replaced the old and tedious job of hand tufting, the cushion machines the old process of hand filling and even in a few shops the power machine has taken the place of the hard pulling labor of making seats, but these are but a few isolated cases.

If we cannot make a masterpiece that will create for us an everlasting name, why not make the most of our opportunity and become as efficient in one line as we can.

A Novel Method of Shipping Lumber

A strong syndicate, known as the Furber Lumber Co., has been formed in British Columbia to export lumber on a colossal scale. Orders for 30,000,000 feet have already been placed and contracts pending will call for many times this amount.

The unusual feature of these deals is the contemplated method of delivering the lumber to Europe. The proposal is to construct a new type of lumber carrier, which has been styled the "dismountable ship," and which the designers claim will cut the cost of handling lumber more than fifty per cent. This construction calls for the simultaneous building of hulls and cargoes in the form of an automotive craft. This carrier will be propelled by power and sails, and on arrival at its destination can be quickly dismantled and the engines shipped back to be installed in another vessel. In this way the advantage of low freight rates enjoyed by Norway and Sweden can be successfully overcome.

It is as difficult to see how money makes some men as it is to see how some men make money!

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Working for Efficiency in Finishing Room

**Good Working Conditions of Prime Importance—
Suitable Material Properly Applied**

By Dixy Wells

The finishing room is not a place in which to experiment. To secure satisfactory results good materials must be bought and the use of them thoroughly understood. Results win, and as order is Heaven's first law, the finishing room should be conducted in an orderly manner.

Ventilation must be such that the workmen will have boundless energy, for good results cannot be expected from a tired or exhausted finisher. The temperature of the room should be watched closely. Overheating tends to make a workman lazy and stupid. It cuts down his vitality and working efficiency. On the other hand, if the room is too cold he becomes irritable and loses time, his material does not work as freely and production is decreased.

Good light is a very essential factor. Much thought should be given to the lighting facilities, with particular reference to the quality of the light produced. Poor lighting causes mistakes, while too strong a light will injure the eyes of the workman.

Up-to-date Equipment Furnished

Cleanliness and sanitation should be considered. Clean working conditions make for clean 100 per cent. products. Sanitation is absolutely necessary for the best working conditions. The shop should be as quiet as possible. Too much rattling has its effect upon the nervous system of the employee, and distracts his attention from the work in hand. There is an old saying: "It is a poor workman who finds fault with his tools," but after all you cannot make wheat bread without wheat, or good varnish without the proper ingredients. Have your finishing room thoroughly equipped, if you want to secure the best service, and to eliminate improperly finished goods.

Of course, it is hard to find a finishing room where every point has been looked after, and every convenience of a practical nature installed. But you should be able to see the shortcomings of your finishing department, and at least work toward their gradual elimination. Study your needs and install equipment and use methods that will suit your product and enable you to increase production.

Not only visit your shop during working hours, but stroll through it after work, when everything is quiet, you may thus get a newer grasp of your problems. Study the habits of your workmen. Discover if you can, lost motion, and prevent circular routes to profit points that should be readily reached by a straight line.

The materials are, of course, of prime importance. We find better goods on the market today than ever before, due to the advance in skill displayed in modern varnish making. It is a mistake to try to dope varnish after it comes from the manufacturer. The expert who mixed the varnish at the factory should certainly

know more about the functions of a perfect varnish, and the necessary ingredients, than the workman who by comparison is a layman. The average varnish will give good results if properly applied. If it is not found suitable for the work for which it was intended, a change in the source of supply might result in an advantage. It is a very unsatisfactory practice to try and mix varnishes for certain needs, and when attempted, in the majority of cases, ends in failure. Meddling seldom mends, it only complicates your work. This is especially true in these days when there is a specific varnish made for every possible finishing need, making it unnecessary for the finisher to do any experimenting or manipulating.

Secure a Suitable Grade of Material

State the purpose for which your varnish is required, and a good salesman will sell you the proper material. Do not try to improve upon the work of the varnish maker, for by juggling the contents of this can and that, by measuring and mixing, you are more than likely to have a camouflaged material which will not do the work for which it was intended. It is advisable, as far as possible, to buy and use a single line of varnishes. That is, do not secure on grade from one manufacturer, another from a second, etc. The different grades of one maker are more liable to contain the same raw materials, and are made by a uniform process. They also contain the same dryers, and uniformity in results is thus secured.

What are known as flat finishes are in considerable demand to-day. A rubbing varnish should be flowed on freely, with a good varnish brush. When thoroughly dry, each coat should be rubbed with pumice stone flour. The importance of the drying process should be emphasized. Subsequent coats of varnish will never prove up to specifications unless ample drying time has been allowed between the different coats. The last coat should be flowed on freely, allowed to level out and dry, and should be rubbed only sufficiently to kill the lustre. This will give a fine dull rubbed finish to the surface. If the preceding coats have been properly rubbed, the last operation should be very simple. An important point affecting results when using rubbing varnish is that the surface to be finished should be absolutely clean, and every bit of dirt should be washed away.

Finishing Metal Furniture

Now that so many manufacturers are giving attention to the manufacturing of metal furniture, a word as to the methods of the finishing articles of this description should not be amiss. Some have reported in observing this work, that the sharp edges on metal furniture, such as the outline of the four corners, rivet heads, etc., are especially subject to the easy attack of wear and tear. Many also are of the opinion that the same varnish has less life on metal furniture than when used on wood surfaces.

Exhaustive tests have been made along this line, and if a moment's thought is given, it will readily be

seen that the steel surface has less give; it is more unyielding, and the slightest attack will show on the finished surface. Of course, the varnish is the first to suffer. A wood surface is more or less elastic, and it gives in response to a blow or other wear and thus saves itself. Its elastic resistance enables it to bear the wear and tear with better results than metal furniture, the very nature of which is unyielding.

Of course, there are many varnishes which will not break up even under hard strain. The gloss, of course, is liable to be lost, but the varnish does not lose its value as a protecting coat. The metal furniture

should receive a greater number of coats of varnish than a similar wooden surface. It is likely that it would be required to be varnished more frequently if the "new" appearance is to be maintained. It is suggested that at least three coats of varnish should be used on metal goods in order that they may successfully withstand the demands of present-day wear.

When a piece is to be re-varnished, the surface should first be cleaned with a good oil cleaner—one that will revive the life of the old finish. The varnish thus receives a new lease of life, acquiring added strength and protective value.

The Story of Shellac

Swarms of Lac Bugs—Gathering the Gum—Grinding and Washing—Best Method of Storing

A collection of cooties making itself useful! That's what shellac in the making would look like to the average man who didn't know much about it.

The strange thing happens in India. (The name of the particular provinces are hard to pronounce and you probably wouldn't remember them anyway, so let's let it go at that.) Some thousands of lady lac bugs, little bright red creatures, no bigger than a pin head, fasten themselves onto the branches of a Palces or Kulumb tree. When they first settle, it looks as though the branch were wrapped in a piece of bright red flannel. As they settle down for their visit, they suck the juice from the tree, and begin to exude sap or resin. This resin is not the juice of the tree, but an exudation of the bug itself.

As the days go by, this resin completely covers and surrounds each little bug and her neighbor and hardens into a glossy crust all over and around them. In six or eight months, each little lady bug has her "big day." She gives birth to a thousand or so babies, who break their way through their mamma and her surrounding wall of resin and go out into the world to do the same sort of a job she did. The little lady naturally goes out of existence in the process.

Shellac in its Crude Form

We are tremendously interested in what is left of her; for the tree branches, all encrusted with the resinous deposits are sticklac—the original product from which our shellac is made. As soon as the young insects have ceased to emerge, the branches bearing the sticklac are lopped off. From some trees, the crust of lac may be detached easily by twisting in the hands, from others it must be scraped. At any rate it is removed and ground up in a hand mill.

Now this ground lac, called seedlac, contains a considerable portion of the bodies and pigment of the little insects. This gives it a deep red color, which is removed by repeated washings in huge vats. The washer stands upright in the vat, supporting himself by bamboo rods fixed across the top of the vat and vigorously treads and kneads the lac with his feet. As each washing is completed, the contents of the vat run out onto sieves, which hold the seedlac and allow the coloring matter to run off into a tank. This lac dye was formerly sold at good prices for the dyeing of silk, wool, leather, etc., but since the advent of low-priced coal tar colors made it unprofitable to market it so that today it is thrown away or used as a fertilizer by

native farmers. Incidentally, it is interesting to Canadian washing machine manufacturers to note that an able bodied washer will cheerfully tread lac from sun till sun for the munificent sum of 2c a day. Electricity would not get very far against that sort of competition.

The seedlac, now that the color is removed, should be a fine pale orange, and is ready to be made into shellac. It is separated into three grades by sifting—large granular—small granular and dust. The first type is sorted according to color and clarity, and used in making the superior qualities of shellac. The small grains and dust go to the making of the ordinary grades.

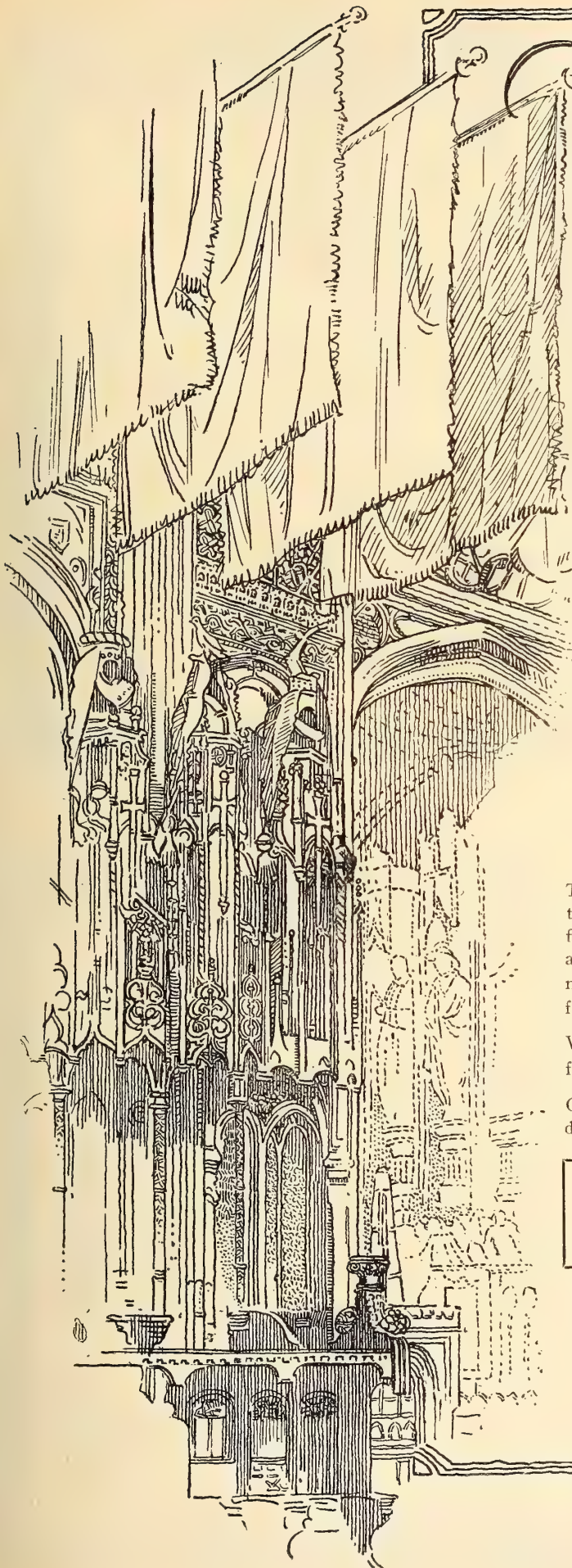
The Final Operation

The seedlac is filled into long narrow bags, made of cotton drill, 10 to 12 yards long, and held before an open oven. The lac in the bag melts and oozes out of the bag. Two men twist the ends of the bag to help force the shellac out and a third catches the still half liquid mass and spreads it smoothly on a hot cylinder, using palm leaves to smooth it out. Another workman peels it off the cylinder—taking the two lower corners between his toes, the upper corners in his fingers and the top centre in his mouth, and squats down before a fire hot enough to melt the lac. It may be remarked that that is quite a heat for a human being to sit down to without a grimace. As it melts he pulls at it and manipulates it till it is worked out into a uniform sheet, about 5 ft. x 6 ft., about a sixteenth of an inch thick. This sheet is cooled, and defects or dirt are punched out. What is left is orange shellac as we get it. The color varies, according to grade, all the way from the dark brown to the pale orange. It will be seen that orange or brown shellac is a natural product.

How Shellac is Bleached

From the finisher's standpoint this natural product has one serious defect. It has so much color that it affects the shade of any wood or finish underneath it. This is an advantage, on many woods. But on the white woods, maple, particularly and in general any finish where a red tinge is objectionable, the natural shellac shade will not do.

Bleached or white shellac was produced to overcome this difficulty. The bleaching process is a good deal like the method for bleaching cloth and other materials. The shellac, which is soluble in any alkaline solution, is dissolved in borax, and bleached to the proper whiteness with a soluble bleaching powder.



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The glory of Westminster is centuries old, yet today the wonderful woodwork of the Knights' Gallery is as glossy and radiant, as beautifully lustrous as ever.

Think how many weeks and months of toil and infinite care those old woodfinishers would have saved if they could have turned to

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These stains meet the demands of modern manufacturers—especially furniture, piano and cabinet work finishers—for speed, volume and economy, plus the all-essential beauty. Practical, because they are made by men who were wood finishers themselves for years.

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In practice this is a very delicate operation. If it is carried too far, the bleach is sure to attack the structure of the gum itself. Properly done, nothing but the color is removed, the shellac being left as strong and elastic as in its natural state. After the shellac has reached the proper shade, acid is added to the solution until it is "neutral." Since the solution is no longer alkaline the shellac falls out of it to the bottom of the vat, and the liquid is run off. The wet shellac must now be carefully washed to remove all possible bleach or acid. Then it must be dried, because any moisture present hinders the speed with which it will "cut" in alcohol and makes it considerably slower drying.

This drying process was a great stumbling block up to recent years. The old-fashioned way was to spread the white shellac on the shelves of a steam room and trust to luck that it got dry. Sometimes it did, but fully as often it didn't. Furthermore, the strenuous chemical process it had gone through naturally made the white shellac more or less perishable. When the room got too hot, or the moist shellac was left in for too long a period whole batches would go insoluble. Sometimes the shellac collected enough dust to change the color considerably. A few shellac houses still use some modification of this method but most present-day manufacturers dry in special kilns where the temperature and humidity are kept constant or better yet in a vacuum chamber—where the water is literally sucked out at low temperatures, instead of being roasted out.

Color is one of the best indexes of good white shellac. If the shellac has a live creamy-white look to it, you can depend upon it. The bleaching process was not carried too far, and the shellac varnish made from such gum will be transparent, elastic and durable. Beware of the dead, gray-white bonedry shellac. Such a color means that the bleaching has not only changed the color but the structure of the gum. Varnish made from such gum will almost surely be more opaque, or cloudy on the work, brittle and inclined to check. Always bear in mind that no matter how carefully a white shellac is made, it is more perishable than the natural gum. Cut it up as soon as you receive it. Store it in wooden barrels and you will find that it keeps very nicely.

The What and How of It

Shellac has been used from the earliest finishers down to date and with very good reason. For certain purposes it is unequalled. It can be dissolved in alcohol and dries quicker than any other varnish. The combination of wax and resin which exists in no other gum makes it hard, elastic and durable. It is the best primer coat for almost anything. It fills the pores of the wood exceptionally well. Dries flint hard in an hour or two. Seals anything underneath it effectively, stopping bleeding from sappy woods or stains, where nothing else will. Holds up the finish on top of it. The reason for this last is, that shellac is insoluble in any of the oil and resin varnishes used by the finisher. If you use a varnish first coater, there is always a chance of the succeeding coats dissolving it and sinking in, to leave blotchy and dull places on the final finish. This is particularly bothersome on polished or rubbed work.

It is the only proper first coat for waxed work. Its flinty finish stands the rubbing without any rolling or gumming up under the pad. Shellac dries quicker and harder than anything else the finisher has and makes for speedy production and durable jobs.

During the past year or two when shellac prices have been increasingly higher, many finishers have

turned to substitutes, so-called, and adulterated or cheaper shellacs. It may be said that there is no substitute for shellac, in the true sense of the word. There are certain other gums which dissolve in alcohol as shellac does, but the resemblance ceases there. Where a quick drying high gloss finish is desired, without any necessity for standup-ability, these so-called substitutes answer satisfactorily. But where durability, solidity and hardness are factors, they simply will not do. Shellac is now coming down in price and soon will be on a usable basis for almost any one. As it comes down, more and more wood-workers and cabinet men are coming to the use of it and the genuinely satisfactory finishes which can be obtained with it. Drying speed, increased production and sure results are worth more than a few cents a gallon. Use pure shellac where shellac is needed. Don't substitute a soft-gum mixture for it, any more than you would substitute a ceiling varnish for a rubbing varnish.

Best Methods of Storing

Keep your shellac varnish in a dry, cool place. If it stands around in a damp cellar it absorbs moisture, which makes it cloudy and slow drying. If you ever have shellac which seems to contain jelly-like or stringy masses, you can usually blame it to moisture. Sometimes a little acetone or wood alcohol will clear these masses up. Don't keep a shellac varnish in metal containers, except those recommended by shellac manufacturers. Most metal turns shellac black. This applies to paint cans and brush ferrules, as well as tanks.

Agitate your shellac barrel whenever you take out a quantity for use. Shellac contains a considerable amount of natural wax, which tends to settle on long standing. If you do not shake up your barrel occasionally, you may have a comparatively thin solution at the top of your tank, and all the heavy varnish at the bottom.

If you have any other difficulties with shellac than these, and you are not likely to, ask the man who sold it to you or the "Canadian Woodworker and Furniture Manufacturer," which is always at your service.

Large Order for Wood Filler

Probably the largest wood filler order ever taken by one house was that received by the Marietta Paint & Color Co., of Marietta, Ohio, from the Victor Talking Machine Co.

About the first of May the Victor gave the Marietta concern a contract for their entire requirements in wood filler for one year. This will run close to half a million pounds of filler.

The deal was consummated by G. A. LaVallee, vice-president and sales director of the Marietta Paint & Color Co., and was doubtless made after extensive comparative tests.

Optimism Pays

One manufacturer remarks, "Oh, you fellows make optimism your stock in trade, you never talk anything else. With you business is always going to be good. We never expect you to tell the producer to hedge." Well, did hedging, as a policy, ever make you or any other merchant any money? Isn't optimism better than pessimism as a regular policy? Business is usually good for the fellow who expects it to be and if it is bad it is better for him than for Gloomy Guss, every time.

Increasing speed and reducing costs,
while making certain highest quality
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Surpasses Brushing

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On every class and grade of work the sprayed-coating will be uniform and free from brush marks, runs, fatty edges and like faults.

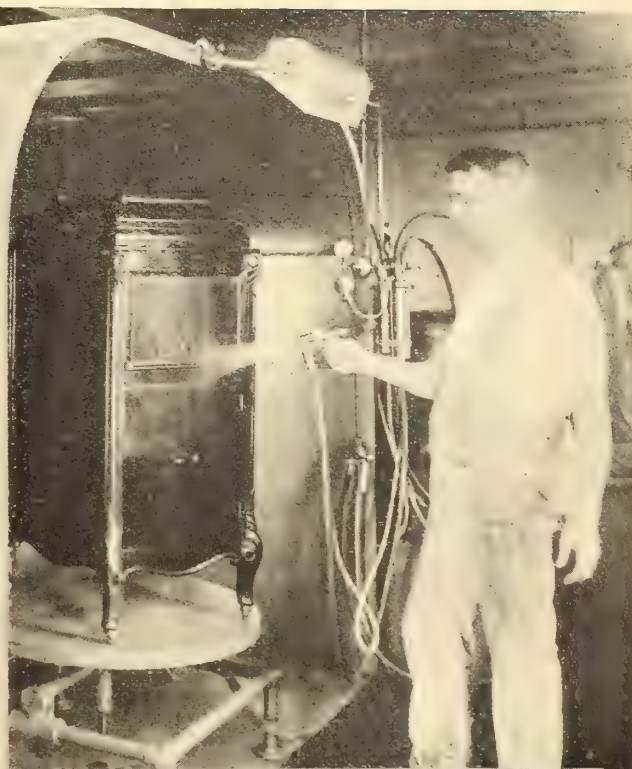
Aeron System exhausting equipment will insure a clean, healthful place in which to work; and reduce any fire hazard.

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INTO ONE
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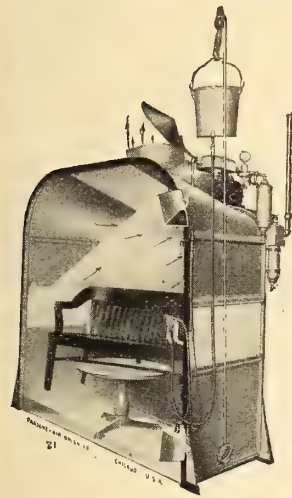
In thousands of finishing plants where countless products, large and small, are finished and all kinds of liquid finishing material used, Paasche equipment under the most variable and exacting tests possible produce a finish of uniformity; free from runs, sags, fatty edges and brush marks.

There is no longer any question as to whether or not these perfected mechanical air finishing devices are adaptable to your work. This is proven everywhere daily; year in and year out, and YOU CANNOT AFFORD TO DO WITHOUT THEM.

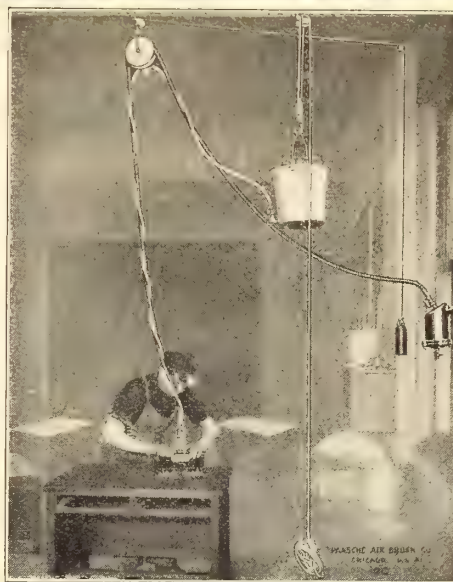
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with each installation.*

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Most effective and economical air finishing system known. One of our many popular (completely equipped) air finishing outfits as used by furniture plants everywhere. Made in various sizes to meet all requirements. Successfully applies liquid materials—all kinds and descriptions.



Most efficient rubbing machine in operation. Turns hard work into play. Perfect balance eliminates vibration—unparalleled in the performance of its work. Operated by compressed air. Does more and better work. Guaranteed. WRITE US TO-DAY FOR FULL INFORMATION.

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90 Pcs. Qt. Oak, 2, Sides	60 x 30 x $\frac{3}{8}$	64 Pcs. Mahogany, 1 Side	60 x 30 x $\frac{3}{8}$
10 Pcs. Qt. Oak, 1, Side	72 x 24 x $\frac{3}{8}$	18 Pcs. Mahogany, 2, Sides	72 x 24 x $\frac{3}{8}$
6 Pcs. Qt. Oak, 2, Sides	72 x 24 x $\frac{3}{8}$	63 Pcs. Mahogany, 1, Side	72 x 24 x $\frac{3}{8}$
50 Pcs. Pl. Oak, 1, Side	60 x 30 x $\frac{3}{8}$	8 Pcs. Qt. Oak, 1, Side, & Pl. Oak	72 x 24 x $\frac{3}{8}$
56 Pcs. Pl. Oak, 2, Sides	60 x 30 x $\frac{3}{8}$	Back	72 x 24 x $\frac{3}{8}$
58 Pcs. Pl. Oak, 1, Side	72 x 24 x $\frac{3}{8}$	6 Pcs. Qt. Oak, 1, Side & Pl. Oak	72 x 24 x $\frac{3}{8}$
86 Pcs. Pl. Oak, 2, Sides	72 x 24 x $\frac{3}{8}$	Back	60 x 30 x $\frac{3}{8}$
22 Pcs. Birch 1, Side	60 x 30 x $\frac{3}{8}$	4 Pcs. Walnut, 1, Side	60 x 30 x $\frac{3}{8}$

3 ply, $\frac{1}{4}$ " Thick

36 Pcs. Qt. Oak, 1, Side	72 x 24 x $\frac{1}{4}$	82 Pcs. Birch 1, Side	72 x 24 x $\frac{1}{4}$
50 Pcs. Qt. Oak, 1, Side	60 x 30 x $\frac{1}{4}$	50 Pcs. Mahogany, 1 Side	60 x 30 x $\frac{1}{4}$
1 Pcs. Qt. Oak, 1, Side	68 x 24 x $\frac{1}{4}$	37 Pcs. Mahogany, 1 Side	72 x 24 x $\frac{1}{4}$
3 Pcs. Qt. Oak, 1, Side	70 x 24 x $\frac{1}{4}$	12 Pcs. Mahogany, 1 Side	70 x 22 x $\frac{1}{4}$
3 Pcs. Qt. Oak, 1, Side	60 x 24 x $\frac{1}{4}$	8 Pcs. Mahogany, 1 Side	60 x 24 x $\frac{1}{4}$
50 Pcs. Pl. Oak, 1, Side	72 x 24 x $\frac{1}{4}$	4 Pcs. Mahogany, 1 Side	54 x 24 x $\frac{1}{4}$
50 Pcs. Pl. Oak, 1, Side	60 x 30 x $\frac{1}{4}$	3 Pcs. Mahogany, 1, Side	72 x 20 x $\frac{1}{4}$
1 Pcs. Pl. Oak, 1, Side	70 x 24 x $\frac{1}{4}$	1 Pcs. Mahogany, 1, Side	60 x 29 x $\frac{1}{4}$
62 Pcs. Birch 1, Side	60 x 30 x $\frac{1}{4}$	4 Pcs. Mahogany, 1, Side	72 x 12 x $\frac{1}{4}$

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Veneers AND Panels

Suggestions for Successful Veneering Many Problems Encountered—Cross-banding for Thin Face Veneers—Advisability of Taping—Rush Stock into the Press

By S. H. Johnstone

The simplest and at the same time the most common form of veneer work is the plain panel. It is found in one form or other in the bulk of our furniture, in phonographs and pianos, in boxes and many forms of general woodwork. Many new uses, such as aeroplanes and boat construction, are being found for this stock.

The manufacture of this material, while seemingly simple, presents many problems that tax the ingenuity of those employed in its production. Many firms are experiencing considerable difficulty and are not achieving the results that they should, with a corresponding decrease in the quality of their output. Some of the items we will touch on may be of some help to those who are experiencing trouble.

Veneered stock may be roughly divided into two classes—common and finished veneers. The rough or common three ply is used for drawer bottoms, case backs, boxes and in other places where a high finish is not required. The stock entering into veneers that are to be finished requires additional attention both in choice of material and methods of manufacture.

Among some of the common faults that may be mentioned are blister, peeling, checking, warping, and in addition there are a host of others. The writer visited a friend not long ago and while there saw a handsome mahogany dresser that was rendered unsightly through the peeling of the veneer on the top and drawer fronts. This piece had never been exposed to unusual conditions either of heat or dampness. Had the manufacturer used every precaution in laying his veneer, this trouble should not have occurred. Occurrences like this give veneered material a black eye and to a certain extent retard sales.

In laying up stock for common work the main essentials to observe are the dryness of the material, using the defective veneer for the core, the elimination of warping, and gluing under such conditions that the veneers will hold together and perform the work that they were intended for. Should there be a slight variation in the thickness of the stock used, it does not matter very much.

Crossbanding for Thin Veneers

When we come to working of material for fancy face veneers every precaution must be observed. One of the first essentials is that crossbanding should be used on all work that is being prepared for thin face stock. This has been demonstrated through years of experience. To glue face veneers on solid cores is to court trouble from open joints and checks.

The laying of the crossbanding is an operation that is often neglected or improperly performed. Many a fine piece of work has been spoiled through a faulty

method of doing this operation. Care must be taken to see that the joints are properly made, that sufficient time is allowed for the stock to dry thoroughly before sanding or scraping, and applying the face veneer. Sometimes the stock is sanded before the joints have had a chance to dry with the result that the stock at the joint is cut down before it has shrunk to its former size so that when the piece is thoroughly dry, a slight hollow or depression will be found to exist along every joint. This shows up plainly when the piece is finished and spoils what otherwise might have been a perfect job.

Again the crossbanding laps over at the joint and is put in the press in that shape. A workman when questioned about this said that the sander would cut the joint down smoothly. Granted, but he failed to take into consideration the fact that the extra thickness of the joint would subject that particular portion to undue pressure, with the result that the stock would be compressed. After being cut down in sanding, the compressed grain would gradually resume its normal condition and a slight ridge would be formed. Taping seems to offer the best solution to this trouble as well as insuring a perfect joint.

The taping of veneers, both crossbanding and face, has been adopted by many of the best veneer manufacturers. There are machines that simplify the applying of the tape and turn out a large number of well jointed pieces in a day's run.

Reduce Core to Even Thickness

The sizing of the core stock after the crossbanding has been laid and dried is very necessary. Rotary cut veneers vary slightly in thickness, rather different spots on the same piece show varying thicknesses. This is due at times to improperly adjusted knives and pressure bars on the veneer lathe, or to the log as it becomes smaller, springing away from the knife. A knot or a particularly tough piece of cross grain will also make a difference in the thickness of that particular spot. While these variations may be very slight yet the difference is often sufficient to cause the thin face veneer to be cut when being run through the drum sander.

Another point that is often overlooked in the laying of crossbanding is to make certain that the best face of the material is kept to the outside. This material is often rough or ruptured on one side and unless the glue man makes sure that the best side is kept out, the defects may show through the face veneer and thus mar the finished surface.

The same holds true when laying the face veneer. Most rotary cut veneers have a smooth and a rough side. Common sense should lead one to lay the best side out, but where both sides look pretty fair, this is often neglected. Owing to the strain on the grain during cutting hair line checks often appear when the stock is laid wrong side out.

Some veneer men advocate the plan of allowing the

glue to cool somewhat before applying it. They claim that this eliminates a lot of surplus moisture that would otherwise be absorbed by the veneers. Whether this is true or not a lot of trouble could be overcome if every veneer man made it a point to place the veneers under pressure as quickly as possible after applying the hot glue. After the glue is applied and the face veneer laid the veneers are absorbing moisture. The face veneer being thinner will take up the moisture faster than the heavier core, consequently swelling more. If this swelling occurs before the stock is put under pressure, it must after being removed from the press, dry out and shrink again. As the face material swelled more than the body, it must necessarily shrink more. When this occurs, something has to give. Hairline checks or open joints usually follow. The same holds true if the veneer is not perfectly dry when applied.

After being removed from the presses, the panels should be piled away on sticks in a warm place for a week or more before being worked further. Some advise the use of the humidity system, the same as used for the drying of lumber, for drying panel work but this has not been used sufficiently to justify an opinion.

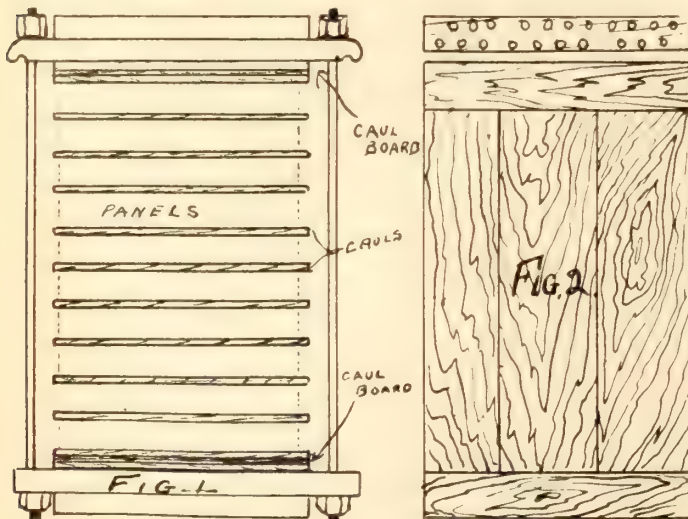
If all precautions are observed one should experience little difficulty in turning out a perfect panel. Should difficulties arise and persist a query to your trade journal will often bring suggestions that will enable you successfully to overcome the trouble.

Serviceable Caul Boards

By A. Hudson

Good, well-made caul boards are important factors in the producing of satisfactory veneered work. By caul boards is meant the heavy pieces that are placed at the top and bottom of the stock when a clamp, similar to that shown in Fig. 1, is used.

To enable them to stand up under hard usage for a considerable time, a little attention should be given to their construction. A board as shown in Fig. 2, is

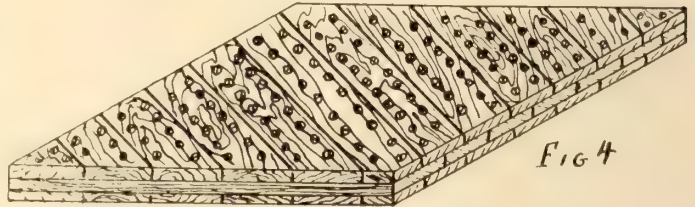
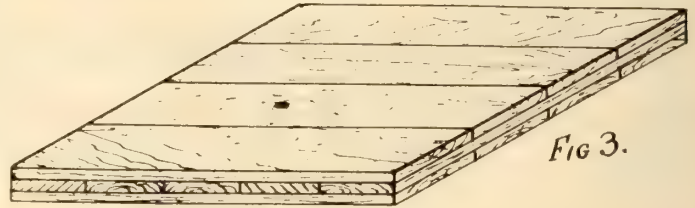


Retaining clamp and light caul board

made of two plies of lumber glued together. The cleats on the ends are fastened on with dowels. A board of this description will give a fair amount of service under light pressure.

For heavy work caul boards constructed as illustrated in Figs. 3 and 4 are very satisfactory. A board made of three ply birch as shown in the third sketch

will stand up well. The stock must be thoroughly dry before attempting to glue it up. The finished board should be heated and a coating of hot paraffin wax or crude vasiline should be applied. This preparation will tend to prevent the glue sticking to the boards



Serviceable caul boards for heavy work.

An additional coat should be applied occasionally to keep them in good shape.

The fourth sketch shows a caul board which may be made of birch or maple. The face pieces instead of running lengthwise are laid at an angle. The bottom stock runs at the opposite angle. In addition to the glue, screws are used on both faces. It is claimed for this construction that the board is stiffer than when made by any other method.

A well made caul or caul board will, with proper care, last for years. Good cauls lead to good work and unless they are well made and kept in good shape it is well nigh impossible to turn out satisfactory work. They should receive proper care and be cleaned and carefully stored in a rack when not in use.

The Origin of Veneer Panels

The origin of the veneer panel dates back a long time in the past, and the first cross-banding seems not to have been done with sheets of wood, but with sheets cut from the stem of a plant known in Egypt as papyrus. The plant has a triangular stem which was split in very thin sheets and layers were placed at right angles. The substance was soft and pressure was applied to make the layers stick together. No glue was needed. The small panels thus made were used as we use writing paper, and some of the oldest manuscripts in the world are on them. The idea of the veneer panel of two, three or more plies, was present. Pressure is now applied in the panel factory to cause the wooden sheets to join with the glue spread between them. Sheets of papyrus had adhesive substance in them to take the place of glue.

New President of the Carborundum Co.

Frank J. Tone has been made president of the Carborundum Company, Niagara Falls, succeeding the late Frank W. Haskell. George R. Rayner has been made vice-president, succeeding R. B. Mellon, of Pittsburg. F. H. Manley retains the office of treasurer.

Essential Points for Glue Room Operators

By J. C. Taylor

While the coming of new glues and a better understanding generally of glue handling has done much to simplify work in the glue room, the more exacting conditions of the day make it just as important as ever for the glue-room man to be on the lookout all the time for new ideas and pointers that will help with the work, and help make it more satisfactory and dependable.

We have gotten away from the idea of the stuffy room and the high temperature, have gotten to the point where we know it is practical to have the glue room more comfortable, both as to temperature and fresh air. Yet knowledge of this fact is sometimes misleading—it leads to carelessness and lack of appreciation of the importance of uniformity in conditions surrounding glue work. No matter what you decide is the most desirable temperature for the glue room, whether it is 70-deg. or 90, thoughtful effort should be made to keep the temperature, air circulation and moisture condition uniform. And this applies whether you are using the old standard glue, vegetable glue, or some of the newer offerings in casein glues. Differences may not show so markedly in the use of some of the new glues, but just the same there is no tenable ground for argument against uniformity of conditions in the glue room, while there is plenty of argument that can be brought forward in favor of it.

Uncertainty in the Glue Room

The one besetting sin of the glue room is uncertainty. The same stock, treated with the same glue, in the same manner, will show varying results in the course of time. Some of it will hold up well, some will warp, some will loosen up, and so on. About nine times out of ten, the trouble is that there has been some difference either in the manner of treatment or in the material. You have thought it was the same, but it wasn't for if it were the results would be the same.

The first step toward this trouble of uncertainty in results is to maintain uniform conditions in the glue room—have the temperature, moisture conditions and air circulation the same. We now have instruments for registering moisture conditions that cost but little and are easy enough to keep where they can be observed. Also, it is easy enough to keep a register of temperature. Ventilation and air circulation are not quite so easy to register definitely, but they can be kept within reason by the exercise of one's faculties and judgment, and air circulation is about the easiest thing to regulate and to keep reasonably uniform. In glue-room work it is largely a matter of preventing drafts that may blow across the faces freshly spread with glue. There are various simple mechanical ways to obtain a circulation of fresh air without drafts, and and enough fresh air to make the glue room wholesome is a good thing for man, and not bad for the glue work, if the air is handled right and the ventilation is kept anything near uniform.

The matter of regulating temperature and moisture is not so simple and easy as that of regulating air. Both may be controlled together and combined with the ventilating system during the winter time, especially when it is cold and dry. But in the spring and summer it is a different matter. For example, there come rainy spring days, with the weather warm and

the air heavily laden with moisture. Then there is a problem—a problem of how to dry the air down to a uniform standard of moisture for glue-room use. Heat is the common means for driving moisture out of the air, but heated air is not needed in warm weather, and its use generally means raising the temperature of the glue room too high. There are ways to take moisture out of air through a process of filtration, and this is one of the things we should be coming to soon in our glue-room work, to help in safeguarding against that common enemy, uncertainty of results.

Eliminating Excessive Moisture

Meantime here is an interesting question: Say there comes a warm, rainy day in spring or summer, and the air is simply soggy with moisture; or, say, a foggy morning, bringing the same conditions—what is the glue-room man to do about it? He can have his moisture-registering instrument, that tells him there is too much moisture present, but that doesn't get him anything but some information that he has already sensed. About the best available answer to that question is to have the stock that is to be glued thoroughly dry and to use it up promptly after it gets into the glue room. This is an occasion calling for a redrier, a hot room or some means for driving from the stock to be glued the extra moisture that it has been absorbing from a moisture-laden air. Under these conditions there is no danger of getting the stock too dry, for conditions are against it; the danger is that from absorbing the moisture in the air and taking up what is in the glue, the wood will be so expanded that trouble will result in the final drying out, from its disposition to shrink back to a proper size.

The problem we are dealing with is that of too much moisture in the air, a thing which happens frequently in quite a large section of the country where glue is spread and veneer used. The best answer under existing conditions is a redrier, a means for promptly and positively driving the moisture out of the stock to be used. This applies specifically to the veneer. If there are heavy corebodies involved, they, too, should have a redrying in a kiln or properly ventilated hot room. In a word, the stock should be gotten bone dry before using, and it should be used promptly when brought into the glue room, not left to absorb moisture from the air. Bring in the stock just as it is needed and work fast, should be the order of things when the air is heavy with moisture.

The time when excessive dryness of the wood may result, if there is such a thing (which I am given to gravely doubt) is in the late summer and early fall, or during dry cold spells in the winter. In each case the dryness, so far as the glue room is concerned, can be dissipated by a proper use of blower fans and what is termed washed air—a passing of the air through a curtain of water. The same system can be used winter and summer. In the winter the air is heated and serves to warm the glue room, while in the summer the washing of the air through water lowers the temperature as well as adds to the moisture content, so that it helps in maintaining comfort and a uniform temperature in the glue room, as well as a uniform condition of moisture. In short, it is easy enough these days to obtain and set up the apparatus neces-

sary to regulate moisture conditions in the air when there is a lack of moisture, and every well-regulated glue room should have one of these washed-air systems and make use of it both winter and summer. The main difficulty comes when there is too much moisture in the air and the weather is warm. By and by we will be getting at that in a positive manner, too, and meantime the pointers outlined here about taking extra pains to dry the stock just before using should help some.

Separate Rooms Advisable

Another pointer worth mentioning along with this question of moisture in the air is that of having a separate room in which to pile stock after it is glued up, while it is being held in the forms for the glue to set. The right idea, so far as moisture conditions are concerned, would be to have the room where the glue is spread, a separate place, and have the glued-up stock taken to a different room, either for the presswork and all, or (if the press is included in the glue room) after it is taken from the press in the forms. But that is not the most convenient way, and convenience and efficiency must be taken into consideration, too, for they are factors in money-making, and the ultimate aim of business is to make money. It is often more convenient to have the clamped-up stock stored in one end of the room where the gluing is done, as this facilitates mechanical handling. Where this is done is simply complicates a little the matter of ventilation and moisture in the air. Presumably the stock is drying out some during the period in which the glue is setting, which means that the moisture incident to gluing is passing off into the air. There is really not so much of this, however, while the stock is clamped up tight, for the moisture can't escape freely, and what is really happening is that most of the glue moisture is being absorbed into the wood body of the glued-up work, and it will evaporate out later after the stock is taken out of the clamps and piled for drying, so with a little extra attention to the matter of ventilation this is not a serious matter.

Two of the things that deserve incidental mention here and more detailed attention later on, are the time stock is kept clamped up after it is glued and the manner of drying out afterward. There seems no question but what the general practice is to take stock out of the clamps too soon. If it were practical, the ideal thing would be to keep the stock in clamps till it is entirely dry and ready to use, but so far no practical means has been discovered for drying out such stock while it is clamped in bulk, so the practice is too common of taking it out after a few hours, when the preliminary setting of the glue has taken place, but before it is thoroughly hardened. In most cases it would be better to wait longer, not less than twenty-four hours, and forty-eight is better. Then the stock should go to a special drying room and just as much care exercised in the piling and drying as has been used in the preparation and gluing. Glue work is not a finished job till after the stock has passed through the final process of drying out all the moisture it has taken on in the process of gluing, and to get rid of Old Uncertainty one must follow it up carefully from the start to the finish.—“Veneers,” Indianapolis, Ind.

Loose pulleys can be a great nuisance in a mill, but if they are well designed with a view to lessening the belt tension and to provide for ample lubrication, they will run for years without advertising their presence.

Accounting for Foam in the Spreader

By R. E. M.

Sometimes a considerable amount of trouble occurs when the glue in the spreader runs foamy. There are many things that will cause this trouble and it will probably take a little investigating to discover just where the fault lies.

Examine the glue closely. If it is whiter in appearance than the stock you have been using it may be doped with chalk. Again some makers add a quantity of alum to make the glue dry quicker, in the manufacturing process, this has a tendency to cause foam to form. The cheaper bone glues or a glue that has too great a percentage of grease in it will often work this way.

The question of grease in glue is an oft disputed one. Many gluemen will maintain that glue should not contain any sign of grease. A small quantity is often beneficial but it must be a small quantity. A good way to determine the amount of grease in a batch is to take a one to ten mixture of glue and water and put it in a clean glue pot. When the mixture is hot add a small quantity of lampblack and stir thoroughly. Take a clean brush and dip it in the mixture and then make a stroke across a clean piece of white paper. From the number of white specks that appear one will be able to judge, approximately the quantity of grease that the glue contains. By saving the results of several tests and noting how the different batches worked a fair idea may be formed of the amount of grease that is permissible. It is advisable to apply this test to every new lot of glue that comes in.

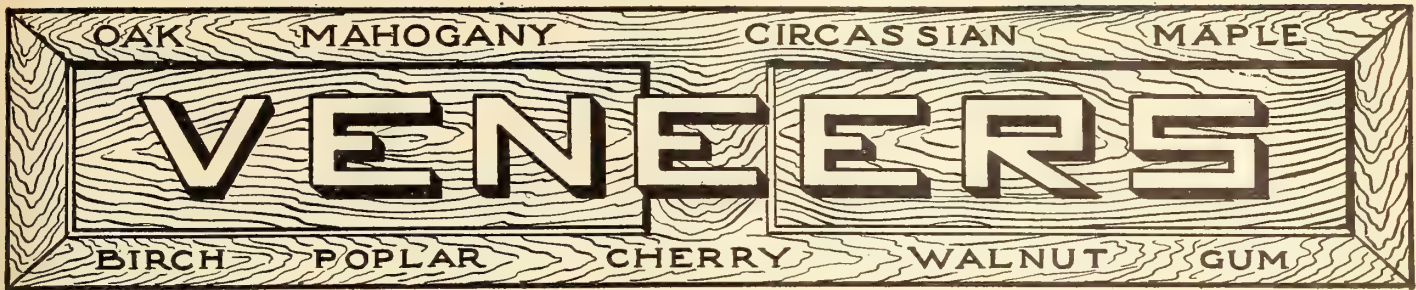
Discussing the value of grease in glue, it is claimed that the lack of it causes foaming. On the other hand, too large a quantity is bad as it has a tendency to weaken the adhesiveness of the glue. In manufacturing a good grade of glue the maker removes all the grease by skimming the tanks containing the boiling glue. Later on many manufacturers add a small percentage of cocoanut oil to eliminate the likelihood of the glue foaming while being worked. Cocoanut oil is used because while having the same effect it does emit any odor.

An Interesting Booklet

The Simonds Manufacturing Company, Fitchburg, Mass., have recently issued a handsomely illustrated booklet entitled “Simonds Saw Steel Products in the War.” The illustrations include a number of interesting scenes, from their up-to-date plant, showing steel in the making.

In addition to supplying the allies with large quantities of their regular lines of saws, knives, etc., they did a lot of experimental work on high manganese steel for steel helmets, and turned out an immense number of pieces of armor plate, in different weights and sizes, for protecting the crews of machine guns, quick firers and to be used in the construction of armored railway cars for the large calibre, high velocity guns. Every piece of armor plate was tested by standard rifle shot at 50 yards.

Machines have been invented that will cut wood in veneers of 110 sheets to the inch. That is pretty thin, but some of the counters have machines which will cut meat in slices still thinner. They are used in sandwiches which at the price of ten cents each will make one ham fetch ten thousand dollars.



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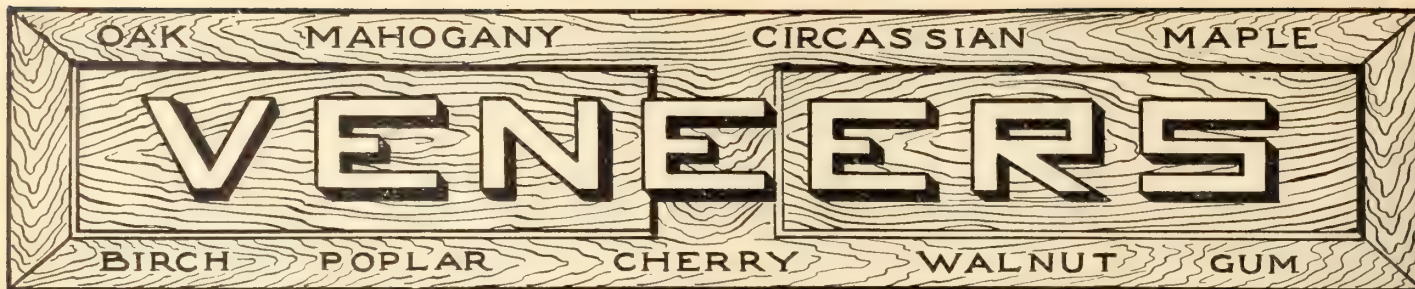
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WE HAVE BEEN CUTTING FOR HALF A CENTURY

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nothing but the choicest northern grown hardwoods. The family pride in the business has maintained constant progressive development. In fact, the plant equipment has often been ahead of the times for many modern and indispensable mechanical im-

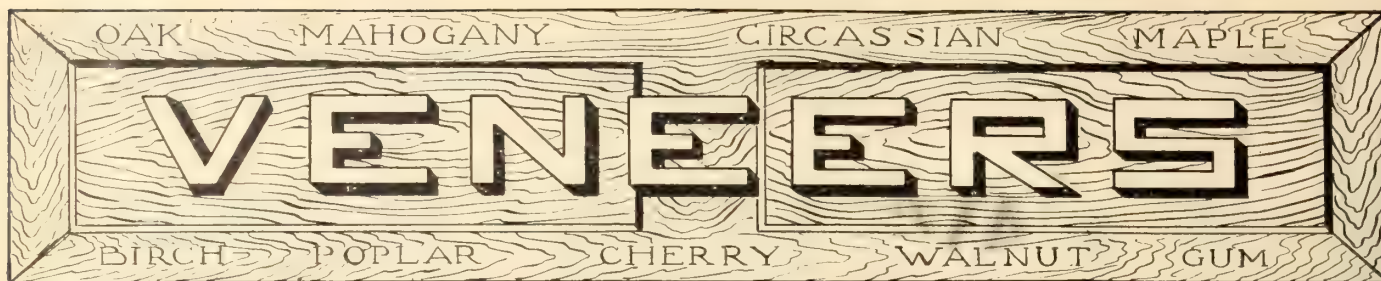
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provements in sawmilling were developed at this mill. After two generations of contact with log supply, the present and future show just as pleasing a quality and quantity as was available fifty-two years ago. Sentiment and sound business judgment have for fifty-two years dictated our policy of unchanging integrity.

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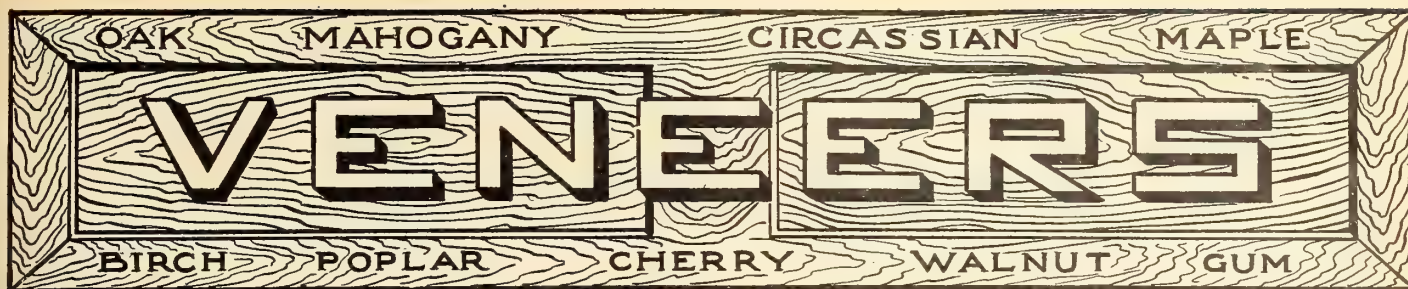
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Our walnut veneer cannot be beat, both in plain and figured wood.

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Figured and Plain Walnut, Walnut
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**1,000,000 Feet Quartered Red
Gum to select from**

CAN fill rotary-cut gum orders promptly

WE Respectfully solicit your inquiries

Have You a Pride in Your Product?

Aside from the dollars and cents your business brings in do you derive a certain satisfaction from the knowledge that you are manufacturing the best chair, the best bed, the best table that is on the market?

Or do you take pride in turning out more chairs, more beds, more tables than any other concern?

Whatever the case may be "BATESVILLE QUALITY" veneers will help you to maintain that standard.

They are smooth, clear and cut to an absolutely uniform thickness, saving you time, money and trouble.

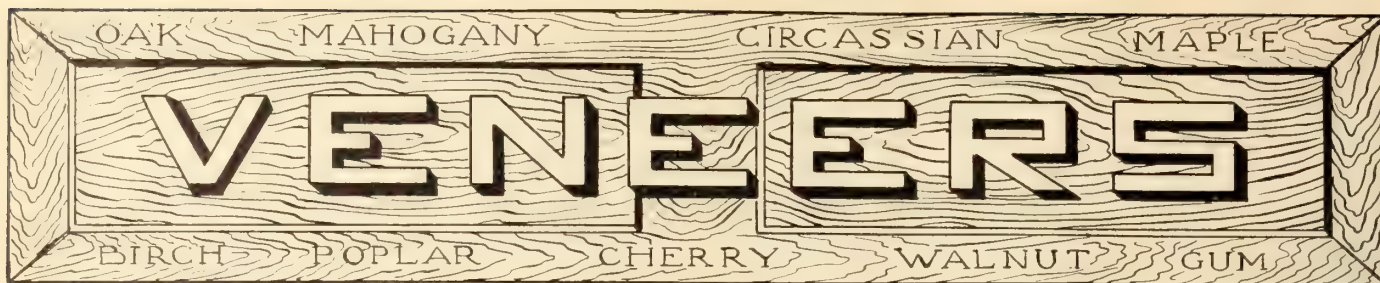
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Batesville Lumber and Veneer Co.
LAWRENCEBURG, IND.

Buyers of Veneers and Panels

will find it to their advantage to purchase from the manufacturers and dealers whose advertisements appear in this publication. They are progressive firms—the leaders in the business, which is a guarantee of good service and prompt attention to orders.

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The prompt and efficient manner in which we can fill your order from our large stock of excellent sawed and rotary veneers, poplar crossbanding and sheet stock, walnut butts and long wood and sawed quartered oak veneers will warrant your sending a repeat order. Your order will be perfect in every way and exactly to your demands. Why not send us a trial order?

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Quartered Oak
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(Cross banding and
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We are in position to furnish the above
PLAIN WOODS

in carload and less than carload lots, and
will be pleased to have your inquiries.

If interested in

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will gladly submit samples.

Veneer Manufacturers Co.
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Superior Quality Sawed Quartered White Oak Veneer 1/20" and 1/16" is our "hobby"

And we give SPECIAL SERVICE
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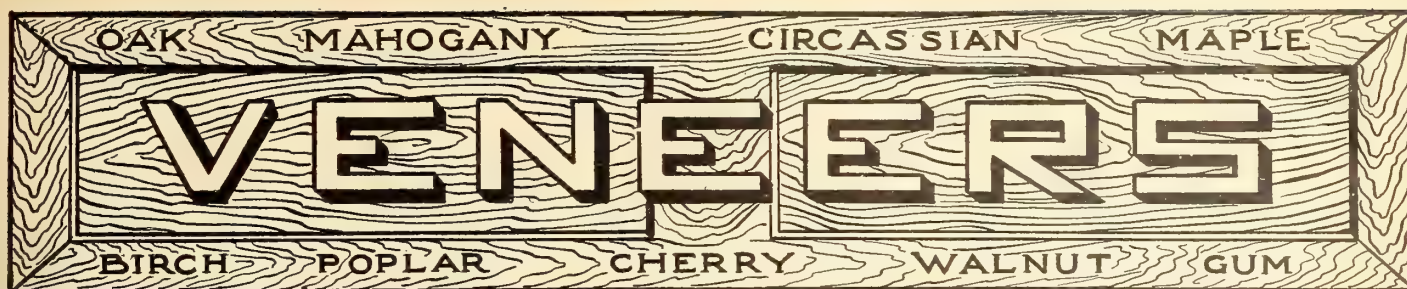
in Birch, Elm, Basswood, Maple, Ash and Beech for all purposes

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ROTARY CUT—MACHINE DRIED

The following Stock on hand ready for shipment;

WHITE OAK Sheet Stock				YELLOW PINE Sheet Stock				RED GUM Sheet Stock			
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80,000'	1/20"	1/16"	1/8"	100,000'	1/15"	1/8"	125,000'	1/20"	1/16"	1/8"	1/8"
125,000'	1/16"	1/8"	6-36"	150,000'	1/8"	6-36"	200,000'	1/16"	1/8"	6-36"	6-36"
100,000'	1/8"	6-36"	36-104"				225,000'	1/8"	Fig.	6-36"	36-104"
RED OAK Sheet Stock				SAP GUM Sheet Stock				CYPRESS Sheet Stock			
	1/15"	1/8"			1/20"	1/15"			1/16"	1/8"	
150,000'	1/15"	1/8"	48-104"	350,000'	1/20"	1/15"	100,000'	1/16"	1/8"	48-104"	48-104"
175,000'	1/8"	6-36"	36-104"	400,000'	1/15"	6-36"	200,000'	1/8"	6-36"	48-104"	48-104"
				250,000'	1/8"	6-36"				36-104"	36-104"
POPLAR Sheet Stock				SAP GUM Log Run				ASH Sheet Stock			
	1/20"	1/15"	1/8"		3/16"	1/4"			1/20"	1/15"	1/8"
125,000'	1/20"	1/15"	1/8"	170,000'	3/16"	1/4"	84,000'	1/20"	1/15"	1/8"	1/8"
175,000'	1/15"	1/8"	6-36"	250,000'	1/4"	6-36"	76,000'	1/15"	1/8"	6-36"	6-36"
150,000'	1/8"	6-36"	36-104"				104,000'	1/8"	6-36"	36-104"	36-104"

We have four million feet of dry lumber on our yard at Helena, Arkansas, ready for prompt shipment

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Here's Good News for You, Mr. Furniture Manufacturer

Now that the war has been brought to a successful termination and the United States Government has released walnut for commercial purposes, we are again running our veneer mills at full capacity. During the last year and a half we have accumulated some of the finest and best figured walnut logs that we have ever had in our possession. These stumps and figured logs are now being manufactured into veneers and we are in position to offer the finest line of walnut veneers that has ever been on the market.

Penrod Walnut & Veneer Co., Kansas City
Missouri

A Letter from a Panel User

By Alexander T. Deinzer

If all that we read be true, it is likely that peace will be established before long. One of the big problems of the veneer and panel manufacturer is that of labor, while somehow he gets out his goods. Nevertheless, every manufacturer in these lines will admit that the labor shortage has been the most vital problem with which he has had to contend.

Many of you are wondering whether the same good fellows who enlisted or were drafted will return to your various factories. This may be true in a measure; at the same time it would be folly to anticipate the return of all our veneer experts. Many of our boys are going to remain on the other side, for there will be wonderful opportunities in construction work. Again, men returning may take positions in other lines or at the factories of our competitors. Therefore, we must not entertain this cocksure notion, but while ready with open arms to welcome those who intend to take up their former work, we should develop experts out of the material we now have at our factories.

How should the novice be trained and what course of training should be established? If we will but direct our attention to how such problems have been solved, we will receive many valuable suggestions. America has fully realized that in order to make her wonderful contribution in war production she must fit and train men for the new peculiar tasks. So it is with manufacturers.

Every apprentice, be he young, middle aged or old, must learn to know woods, their structure, grain, color, hardness, flexibility, and many other important properties. Of course, the average veneer workman is not interested in the botany of the tree or wood, nor with its cultivation as a crop by the forester. Our concern is with woods used in the manufacture of panels and veneered goods. If we are doing very high grade work we no doubt employ foreign woods such as rosewood, satinwood, cocobola, ebony etc. If our line is confined to medium and cheap work our principal woods will no doubt be oak, birch, mahogany, walnut, etc.

It is surprising that veneer and lumber men generally do not a little research work in their offices, time permitting. A microscopic study of woods would be really helpful. It is now generally recognized that much more trustworthy evidence as to identity can be obtained by a microscopic examination than from rule of thumb methods so commonly used by nearly all veneer and lumber men. It will certainly be appreciated by you veneer men how valuable such an instrument would be in determining veneer qualities, detecting veneer ruptures, etc. If the boss does not interest himself, how can he expect the employee to do so?

The next material in which we are vitally interested is glue. Admitting that the art of veneering, and consequently the use of glue, was known to the early Egyptians, nevertheless if the craftsmen of those days were to return to us and visit our modern veneer rooms and observe the wonderfully improved glue that is being used today, what assistance could they offer in solving our many perplexing problems? We must study the physical properties of glues. We must know how glue should be handled and how to properly test it to determine glue quality. Very fortunately, though, we have learned more about glues within the past fifty

years than did our forefathers in the period dating way back to the Egyptian period of 3300 years ago.

Perhaps one of the most annoying problems we have in the veneer room is loose veneer. Sometimes it is loose in crossbanding and sometimes it is the face veneer, and sometimes it is both. We know that the chief causes for this evil are overheated cauls; old, wornout cauls; poor or thin glue, overheavy glue; wet veneer or core stock. A little research work along this line would do no harm and will convince the novice or apprentice of the importance of having the stock just right before he can expect satisfactory results.

Unless the apprentice has artistic taste this should, if possible, be developed. It is necessary to use the right kind of materials and understand the laying of veneers, but another important factor is matching. Some men can match veneer very nicely and get splendid effects, wasting very little veneer. Others may spend considerably more time and material to properly match the pieces. It requires a good deal of study and practice to do this work expeditiously, save material and produce a finished article that is perfect in every respect. If we visit some of the furniture stores and carefully observe the matching of veneers we will be able to do helpful criticising along this line. Indeed, many a dealer has been compelled to sacrifice on the price of the furniture for no other reason than that the veneer was improperly matched by some careless workman. We cannot afford to take chances, and it seems, success considered, that we can not spend too much time teaching this art to workmen. We must get over the notion that the final place for veneer troubles is in the finishing room. The finisher cannot correct your spoiled work. Co-operation is necessary in every department. If you will deliver the right kind of goods to the finisher he will very likely do the rest, and the result will be the sale of an article or articles that will remain sold, establish confidence, and at all times please the customer.—Hardwood Record.

The colossal success that Charles M. Schwab achieved in the business world, as well as the great results he obtained as head of the Emergency Fleet Corporation, the shipbuilding branch of the government, was by leading and not driving men to put forth their best efforts. This is a statement he makes:

"It has been a life-long theory of mine—one that I have put into practice for thirty-five or forty years of industrial pursuits successfully, and one which I think ought to be the keynote of everything we strive to do during this period when we wish everybody's greatest endeavors—I am a believer in the fact that men do their greatest accomplishments by proper encouragement, not criticism.

"I have yet to see the man, however great and exalted his situation, who is not susceptible to the approval of his fellow man. I have yet failed to see the man, who is worth calling a man, who does not put forth his best efforts under the approval of his fellow men, and the severest criticism that can come to any man is not to find fault with him, but not to notice him at all. When a man is not noticed he knows that he has not gained the approval of his fellows, but when he is approved he gives his best efforts."

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We are now prepared to supply the trade with three and five ply panels in well seasoned woods. Our new, modernly equipped plant is now ready and all shipments can be made from stock.

Get our prices before placing your next order.

VENEERS

A large stock of selected veneers is always at your disposal for rush shipment; we will be glad to submit samples or better still call at our warerooms any time and make your own selection.

Mahogany, American Black walnut, Quartered Oak, Figured Quartered Gum, and Rotary Veneers of all kinds.

Get our complete price lists on veneers and panels.

**Toronto Veneer Co.
Limited**

1100-1104 Queen St. West - TORONTO, Ont.

The Lumber Market

Domestic Woods

Conditions in the local lumber market show a marked improvement. All stock is in good demand and orders are being placed freely. Prices are firm with slight increases in a few instances. The building trade is opening up in fine shape and when the different housing schemes are in full swing, it is likely that there will be an unprecedented demand for all grades of building material. As yet the prairie trade has not opened fully, but as soon as the grain growers see indications of a good crop, it is expected that this market will absorb all the material that can be shipped in. Hardwoods are in good demand and the available stocks are being rapidly depleted. The American market is taking a considerable quantity of this material, several large shipments of heavy stock having been made recently. Hardwood prices do not show any signs of easing off, in fact, it is possible that there might be a slight increase in the thicker stocks, particularly 6/4, 8/4, 10/4 and 12/4. The thinner hardwoods, such as 4/4 and 5/4, are being rapidly exhausted. This applies particularly to dry stocks. It is anticipated that it will be some little time before the green lumber of this season's cut is on the market. With regard to softwood the same hold true. The market is very strong and prices as a whole show very few changes. Ottawa prices show a slight increase in most grades. The Montreal market is reported to be exceptionally good at present, with prices holding firm. Hemlock is very scarce and is selling at a slight premium. It is expected that available stocks of this material will be completely bought up in a short while. Local pines are in good demand at good prices. A certain amount of thin Western pine is being offered by the mountain mills at a slight reduction. This stock is sized to about 3/4 in. It is only where scant material can be used that the Western competition is being felt, and when the prairie demand increases it is not likely that this stock will be shipped as far East as Ontario. Taking it as a whole the local wholesalers are well satisfied with the present showing.

Imported Woods

The American lumber market shows a steady improvement, and it is felt that the signing of the peace treaty will remove the last obstacle to a broad resumption of trade. The recognition by the furniture men at their recent meeting of the possibility of a continuation of the existing high prices is considered fortunate, especially if they back their views by strong buying policy. The automobile, furniture and phonograph manufacturers are all in the market, and as their products are in good demand, it is expected that they will be heavy buyers. The menace of a hardwood shortage with possibly an increase in price is not considered imaginary.

The demand for hardwoods in the building trade is expected to be abnormal. Chicago is a good illustration of the building situation as found in the Middle West. The city is short 50,000 apartments, and hotel and office accommodation are crowded to the limit. The

result is that building permits show a new high record aggregating an average of about \$300,000 a day in permits issued. The result of this building activity is that the demand for hardwood threatens to outweigh the supply. Unfavorable weather also tends to decrease the supply so that stocks are being watched carefully and conserved as far as possible.

Louisville is typical of the general trend of the market. The demand for hardwoods is exceeding the supply at the present time, with a result that stocks are reported to be down to about 60 per cent. of normal. Everything is selling at good prices. Veneers are very active and there is a steady demand for oak and poplar. The flooring trade is showing up better, and there are better prospects for interior trim.

Buffalo reports a general improvement in the demand for hardwood, coming chiefly from the automobile and furniture factories. Planing mills have nothing ahead of them and the retailer is not stocking up yet. The only distressing feature is the small demand for boxes. Some of the local hardwood dealers have been going West lately to look after maple, elm, and basswood. They find prices high because western trade is a bit more active.

There has been a marked improvement in the hardwood trade in southern Indiana, southern Illinois and western and northern Kentucky during the past two weeks. Manufacturers are unanimous in the opinion that business will remain good for the balance of the year. Many report a great scarcity of certain items of lumber, and feel that because of this scarcity prices are bound to remain firm for some time. Hickory is hard to get, quartered white and red oak is in strong demand, and gum is in better call now than it has been for some time. This is due to the fact that many large furniture manufacturers in this section have been in the market. Chair and furniture factories are especially busy, and from reports received from the west and southwest, they are going to have a good trade all season. Box factories are also busy.

Regarding Mahogany Sales at Liverpool

Tickle, Bell & Co., Liverpool, England, advise that recent mahogany auction sales at Liverpool showed a slight decline in price. The opinion was expressed though that considering the cost of freight, handling, etc., the price will not be much lower, perhaps an average of two cents. Stocks held in government hands are now nearly cleared out and fresh woods are arriving in large quantities with bidding lively.

The following is a statement of mahogany sales in Liverpool as of March 12:

Mahogany	Logs	Feet	Prices	
			Range	Average
Grand Bassam	41	68,310	9d to 1/5	10.28
Benin	59	27,767	8d to 11d	9.46
Grand Bassam	183	104,982	6d to 8d	6.65
(old and defective wood)				
Honduras	2,873	82,602		
Planks and boards			3d to 8d	5.28
Grand Bassam . . .	22	19,597	8d to 1/3	10.75
Benin	626	411,856	8d to 1/7	10.37
Grand Bassam . . .	482	530,425	8d to 1/5	9.0

Also sold in London on the 6th of March:

Lagos	246	193,803	8d to 1/9	11 1/2
Benin	169	79,896	8d to 1/3	10 3/32

The above prices are in English pence per super ft. (1 penny = 2 cents) per foot Liverpool mahogany measure, which averages fully 30% in favor of the purchaser, when compared with actual contents of logs.



The Home of N. B. Figured Red Gum



*Samples and Prices
Sent on
Request*

The word home is used here advisedly, for the spirit of the home is the spirit of our organization. That is why N. B. Figured Red Gum Veneer occupies a distinctive place in the minds of all buyers of this beautiful cabinet wood. It is the product of an organization whose greatest pride is the quality of its output.

The fast growing use of Red Gum in the manufacture of furniture, in interior trim, and in high grade fixtures, is an indication of the growing popularity of this handsome Southern hardwood.

An added advantage of buying N. B. Figured Red Gum Veneer is the saving in freight which may be accomplished by buying small lots in cars with Sawed and Sliced Quartered Oak and Hardwood Lumber, of which we are extensive manufacturers.

NICKEY BROTHERS, INC.

MEMPHIS, TENN.

Rare Woods From Many Countries

With the development of the woodworking art and the expansion of the furniture trade there came a demand for new and rare woods, and explorers searched the forests of the earth for different effects of grain and color. From the Andaman Islands, from unexplored Africa, from Borneo, from the remotest corners of the earth, woods rivalling the mahogany of Mexico and Cuba have thus been brought to light. From the Philippine and Hawaiian Islands, and from the forests of South America, strange woods have been obtained of wonderful grain and color effect, which are still hardly known by name.

Lately, attention has turned more to fields at hand. Gnarled old trees, twisted and insect-stung, despised by the lumberman, are yielding ornamental woods worth many thousand dollars. Curly-birch is but the twisted grain of the ordinary tree, obtained usually from a crotch or where a trunk has been twisted by frequent wind storms. Today the birch tree that holds the greatest number of these curly burls is considered more valuable than the tall, straight tree without a variation in its normally developed texture. Bird's-eye maple is caused by the sting of an insect whose poison produces a sore in the tree. Nature, attempting to heal the injury, pours new sap into the wound to neutralize the effect of the poison. The outward effect is of a number of excrescences; but when the wood is cut, veneered and polished, the beautiful bird's-eye maple effect is obtained. It is generally the apparently worthless small scrub-oak that gives those delightful pith rays, flaming curls and intricate patterns of light and dark shades that quarter-sawing brings out.

Circassian From the Black Sea

The finest Circassian walnut comes from misshapen, dwarfed trees on the shores of the Black Sea; and the most beautiful parts come from the twisted roots, the burls caused by insect stings. Such growths are so interwoven that they produce the curious and irregular graining which makes the wood more valuable for veneers than mahogany.

No two mahogany trees are quite alike. Formerly only the tall, well-formed trees were cut for trade; now it is the misshapen tree that is more keenly sought. The wood expert searches the forests for some abnormal growth. Pieces cut from a crotch mostly show the graceful curls so much desired in fine furniture. Sometimes the figure shown is of flame-like tufts, called "feather" in the trade. As often happens in some mahogany trees, the fibres are arranged spirally by a freak of nature, and when cut lengthwise light and dark stripes are exposed.

Varied Woods From India

The ebony from southern India and Ceylon has a perfectly white outer wood which is neither beautiful nor useful. There is no grain to it. It is the intensely black heart-wood that is used so extensively for inlay work. The tiger-wood, or Congo walnut, owes its flaming effect to some unknown freak of nature, for the best of it comes only from a limited number of selected trees. East India mahogany, or vermillion wood, owes its coloring to soil, climate and other natural agencies.

But all these woods, and others unnamed, requires the application of industrial art and science. Skilful dressing and polishing is necessary to bring out their

veining and other characteristics. Science is brought to bear in making their exploitation commercially possible; for instance, enabling veneers to be cut to less than a hundredth of an inch in thickness. So the architect and furniture designer get the great choice of beautifully grained woods which they blend and work into the harmonious effects in which we so excel today, surpassing the highest ambitions of the artists in wood of the preceding century.

Better Furniture in Britain

In discussing the furniture situation in Britain a writer in the "Furniture Record" says: Better furniture will be made. There is no doubt that this is correct. I am in a position to state that several important manufacturers who made cheap stuff before the war will turn their attention to better class goods in future. I do not mean that they will make only expensive stuff, but they will make soundly constructed and well designed goods. The old days of price-cutting have passed. They were bad for all concerned, bad for the designer, the workman, the manufacturer and the public. The factories will, in future, produce furniture of quality at a fair price that will be creditable to the maker and satisfactory to the users.

Making two mouldings with one cutter-block doubles the capacity of the machine.

Personal Items

Capt. O. Blinn, Grosses Corner, N.S., has commenced work on 700-ton schooner.

Frederic W. Lane, Vancouver, B.C., has been placed in charge of the box department of the West Coast Lumbermen's Association.

The death of Carl Zeidler, Toronto, recently occurred in that city. Mr. Zeidler was an exporter and importer of piano supplies, lumber, etc.

Charles J. Tulley, of the Forestry Department, Ottawa, was chosen secretary of the Civil Service Federation of Canada for the ensuing year.

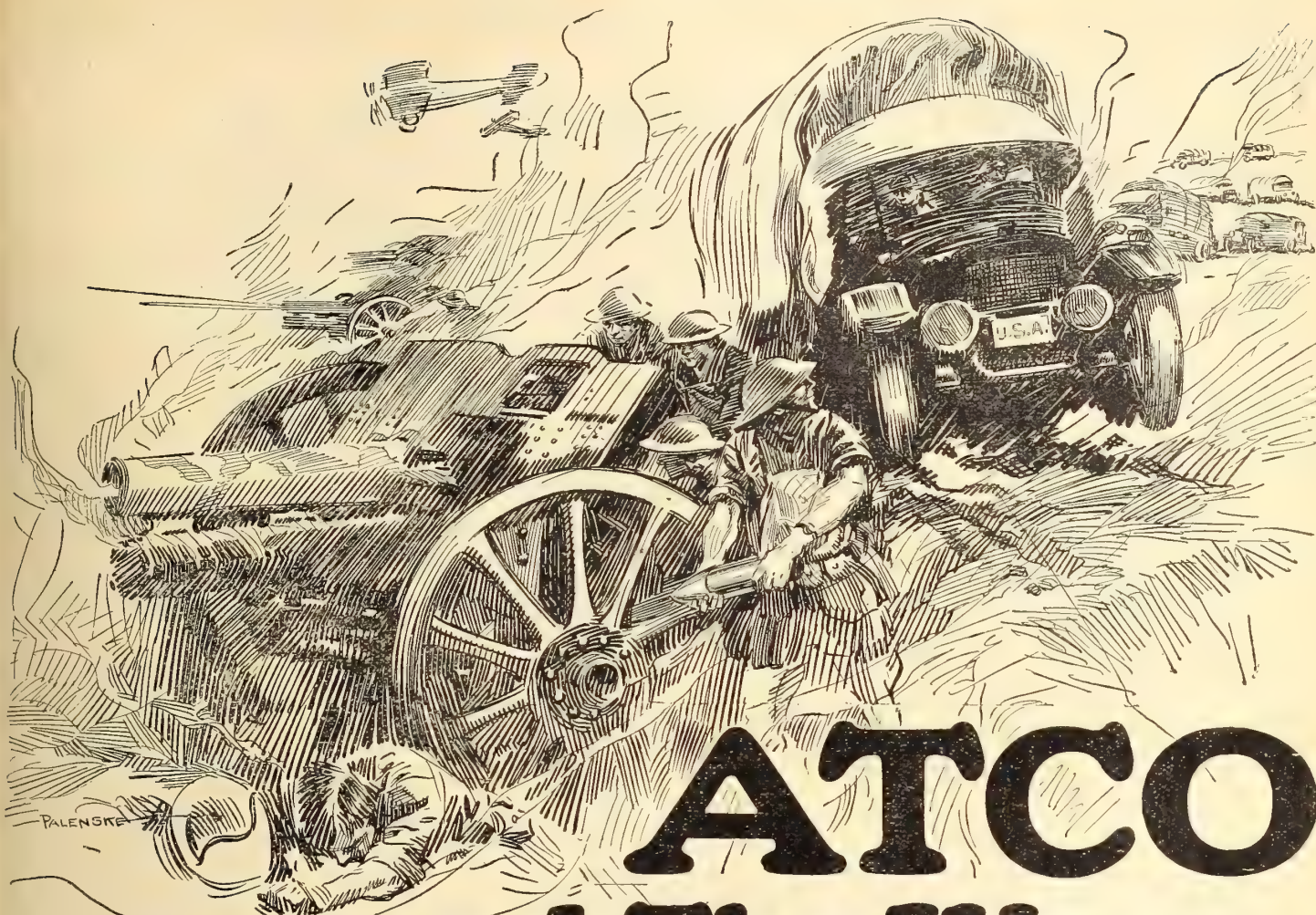
E. B. Snyder, of the Penrod-Jurden Co., Memphis, Tenn., was in Toronto recently on business and called upon a number of members of the trade.

Mr. George Kersley, wholesale dealer in hardwoods and veneers, has moved from the McGill Building to his yard office, 146 Chatham St., Montreal.

William Morton Showers, Bloomington, Ind., died at his home recently. He was a member of the firm of Shower Bros. Co., who are said to be the largest manufacturers of furniture in the world.

A. Bushfield has resigned his position as superintendent of the Hespeler Furniture Co., Limited, Hespeler, Ont., and has taken a position with the Geo. McLagan Furniture Co., Limited, Stratford, Ont. Before leaving the employees of the machine and cabinet departments presented him with a handsome clock.

C. Peto Bennett, of London, England, is at present visiting the different manufacturing centres of Canada. Mr. Bennett is the largest importer of box shooks in Great Britain, having last year handled \$10,000,000 worth of this product. It is expected that box shooks will be included in the preference that Great Britain is granting to other members of the Empire and the Canadian manufacturers will have a splendid opportunity of developing a large export trade.



ATCO

— and The War

OUR country gave her men to the cause and her money to equip and maintain them. That equipment would have been impossible without our splendid resource of raw materials. Notable among those materials most greatly contributing to victory was hardwood. When the call came for a maximum output of southern hardwood materials our company swung its great organization to the service of the government and strained every resource of energy to gain the desired increase in output.

Our organization which for so long has faithfully served so many buyers of southern hardwoods has adequately completed the share of war duties entrusted to it, and now with the equally trying conditions of readjustment prevailing is rapidly attaining its former ranking position as source of supply for strictly high grade southern hardwood products. The severe trials of war-time production have given us something in the way of added experience and knowledge that will enable us to go even further than our past record of unvarying integrity of product and quality of service.

ANDERSON-TULLY COMPANY
 70,000,000 Feet a Year of Hardwood cut
MEMPHIS — TENNESSEE

Newsy Jottings of Interest

The Kindle Bed Co., Stratford, Ont., are adding new dry kilns.

The Eaton Toy Co., Limited, Ottawa, have obtained a charter.

The Colonial Upholstery Shop, Toronto, was registered recently.

The Elgin Handle Co., St. Thomas, Ont., contemplate installing additional machinery.

The Northern Box Factory, located in Edmonton, Alta., recently sustained a loss by fire.

F. H. Plant, Ottawa, Ont., whose carriage factory was recently destroyed, is rebuilding.

Changes have taken place in the organization of the Lonsdale Piano Co., Toronto, Ont.

The Canada Spool & Bobbin Co., Walkerton, Ont., are making additions to their plant and equipment.

The Dominion Carriage Co., Limited, Montreal, are having plans prepared for a factory to cost \$50,000.

The Meaford Furniture Co., and the Seaman Kent Co., both of Meaford, Ont., have adopted the nine-hour day.

Lounsbury Co., Limited, Newcastle, N.B., contemplate building a three-storey addition to their Moncton plant.

The McCracken Show Case Co., London, Ont., are building a brick addition, 30 ft. x 50 ft., to their factory.

A charter has been granted to the Sudbury Improved Car Stake & Manufacturing Co., Limited, Sudbury, Ont.

The School Trustees of Bindloss, Alta., want prices on seating and other equipment. H. G. Moore is secretary.

W. H. Heath & Sons, Wallaceburg, Ont., are rebuilding the planing and saw mill which was destroyed recently.

The Shierholtz Furniture Co., New Hamburg, Ont., are placing their employees on a nine-hour day with ten hours pay.

The Dowse Sash & Door Co., St. Boniface, Man., are making additions to their plant. Estimated cost about \$5,000.

The Harriston Furniture Co., Harriston, Ont., have put the nine-hour schedule into effect. Seventy employees will benefit by it.

The Vancouver branch of the G. W. V. A. have abandoned, temporarily, their plan for operating a toy factory in Vancouver, B.C.

The plant of the Brett Carriage Manufacturing Co., Winnipeg, Man., was destroyed by fire. Loss \$25,000, fully covered by insurance.

The Orillia Board of Trade has succeeded in inducing all the factories in that city to adopt the nine-hour day at the ten hour rate of pay.

J. B. Bellair, Windsor, Ont., is building one-storey addition, 38 ft. x 24 ft.; to his carriage factory. Cost will be in the neighborhood of \$2,000.

The Evel Casket Co., Limited, Hamilton, Ont., are putting up a two-storey brick building, 40 ft. x 30 ft., for a varnish room. Cost approximately \$2,000.

The Penn Canadian Fuel Co., Limited, Toronto, was recently incorporated to manufacture and deal in wood, lumber and all wood products. Capital \$100,000.

An order winding up the Hastings Wagon Co., Water-

ford, Ont., was made at Osgoode Hall recently. The company has not done any manufacturing since 1913.

The Toronto Veneer Company has been incorporated, and will be known as the Toronto Veneer Co., Limited. Capital \$100,000.

Leggatt & Pratt Spring Bed Co., Limited, Windsor, Ont., are building an addition to their factory, 51 ft. x 30 ft. Estimated cost is \$11,000.

Omer Quintal, Limited, Montreal, P.Q., carriage manufacturers, are making alterations and additions to their factory. Estimated cost \$2,300.

A company is negotiating with the Goderich City Council to secure the plant of the Wheel Rigs Factory and fit it up for the manufacture of go-carts.

Incorporation papers have been granted to the Canadian Mattress & Spring Bed Co., who have been manufacturing in Quebec. Authorized capital is \$99,000.

The Fauver Music Company, Limited, Toronto, has been incorporated, to manufacture pianos, phonographs and other musical instruments. Capital \$40,000.

The Chesley Chair Company, Limited, Chesley, Ont., are increasing the capacity of their dry kiln and are installing a new benching machine for chair backs.

N. A. McRae and B. Y. Hicks, Petitcodiac, N.B., are building a three-storey factory, 50 ft. x 60 ft. The second and third floors will be used for a woodworking plant.

The new carpenter shop of the Quebec Central Railway Co., Sherbrooke, P.Q., is about completed. The building is 225 ft. x 75 ft., one storey, and will cost about \$42,000.

The R. Westcott Co., Limited, have recently been incorporated, with head office at Windsor, Ont., to manufacture and deal in wood products of all kinds. Capital \$40,000.

J. H. Leboeuf, Limitee, Montreal, have been incorporated for the purpose of carrying on the manufacture of building materials and other wooden articles. Capital \$20,000.

The Sellers Kitchen Cabinet Company of Canada, Limited, Southampton, Ont., has been incorporated to manufacture kitchen cabinets and other wood products. Capital \$90,000.

The Mageau Lumber Co., Limited, Field, Ont., has recently been incorporated, for the purpose of manufacturing lumber, furniture, sash and doors and other wood products. Capital \$250,000.

O. Chalifour, incorporie, Quebec, P.Q., has been incorporated to take over the business of O. Chalifour and to engage in the manufacture of all kinds of wood products. Capital \$150,000.

The National Tie & Timber Co., Limited, Sudbury, Ont., has been incorporated, with a capital of \$20,000, to carry on business as lumbermen and to manufacture and deal in wood products of all kinds.

Incorporation papers have been granted to the Rastall Lumber Co., Limited, Toronto, Ont., for the purpose of carrying on a general woodworking business and deal in lumber of all kinds. Capital \$60,000.

Hart & McDonagh, wholesale lumber dealers, of Toronto, have moved their offices from the Continental Life Bldg. to 310-311 Temple Bldg., corner Richmond and Bay streets,



Get the Facts!

Keep an accurate record of your labor costs with an International Cost Recorder

"Get the facts," is right, "facts" as to the actual manufacturing cost of any article you make.

When you are buying material, you wouldn't buy it on somebody telling you that it will cost "about" so much, you want to know exactly what it is going to cost you, then why do you not want to know exactly what the goods cost you that you manufacture. Without these "facts," you cannot arrive at the most intelligent selling price.

Does the system you are now using give you accurate, legible, and unchangeable information as to what your labor costs are, and will it give it to you at any time desired? These days of high-priced labor, these are important "facts" in the manufacturing world.

We want the privilege of showing you an International Cost Recorder, that will give you a printed record of each job according to the exact amount of labor time spent on that job; with this record then you have "facts." We have sold thousands of them, that are in use today in the industrial plants all over north America, in large plants and in small plants, No establishment is too large or too small to benefit from the use of our cost recorder.

One more "fact." It will cost you many times more to be without this equipment, than it will to buy it.

International Business Machines Company, Limited

(TIME RECORDER DIVISION)

Royce and Campbell Avenues, TORONTO

VANCOUVER:
110 Water St.

FRANK E. MUTTON,
Vice-Pres. and Gen'l Mgr.

MONTREAL:
Sales Office 212 McGill Street.

(Also makers of Dayton Scales and Hollerith Electric Tabulators)

where they have secured larger and more commodious offices.

It is reported that the Classic Phonograph Co., Breslau, has gone into liquidation on the petition of W. P. Blair, one of the directors. J. R. Eden has been appointed interim liquidator.

The Mainland Engineering Co., Vancouver, B.C., are making extensive additions to their plant. Among other buildings being erected is a 2-storey pattern shop, 50 ft. x 60 ft., of mill construction.

St. Michel, Limited, Montreal, has recently been incorporated to take over the business of H. R. St. Michel & Co., and to engage in the manufacture of brooms, brushes, toys, etc. Capital \$20,000.

La Compagnie de Phonographs Casavant, Limitee, St. Hyacinthe, P.Q., have been granted incorporation papers to manufacture and deal in phonographs, pianos and other musical instruments. Capital \$75,000.

Among the amounts recently included, by the Dominion government, in the estimates for the Department of Public Works was \$13,000 for furniture and fittings for the Dominion Immigration Building at Ottawa.

Shainkes & Frere, Levis, P.Q., are building a four-storey factory for the purpose of manufacturing toys and furniture. They are in the market for woodworking machinery. Estimated cost is about \$20,000.

The C. V. P., the third of five 1500-ton wooden steamers being built for the French government, has been successfully launched by New Westminster Construction and Engineering, Limited, New Westminster, B.C.

The Northern Construction Co., Vancouver, B. C., recently launched a wooden ship. This is the second of five which they are building for the French government. The other three are being rapidly pushed to completion.

The Three Rivers Shipyard Co., Limited, have been awarded a contract for two 6,000-ton steel steamers, length 400 ft., beam 28 ft. Work will be commenced as soon as the wooden vessels, at present on the slips, are launched.

Tupper & Steele, Limited, Vancouver, B.C., carriage makers, report that they are very busy at present. They have an enviable reputation for the high quality of the repair work, body building and painting that they turn out.

Incorporation papers have been issued to the Office Furniture and Supplies Co., Limited, Brockville, Ont., to manufacture and deal in office and household furniture, interior fittings and other wood products. Capital stock \$100,000.

The Ontario Case & Store Fixture Co., Toronto, have moved into larger premises at 20 Beverly St. Mr. Gould, the manager, states that they are very busy at present and that their line of phonographs and fixtures are in good demand.

Baetz Bros. Specialty Company, Limited, Kitchener, Ont., have recently been granted incorporation papers for the purpose of manufacturing and dealing in novelties and electrical appliances and carrying on the business of woodworkers. Capital \$40,000.

The Point Ellice shipyard of the Foundation Company, Ltd., Victoria, B.C., was recently threatened by fire. The fire broke out in the pitch boiling shed, but owing to the efficient fire-fighting organization at the plant, it was extinguished in fifteen minutes.

The Millwork Manufacturers' Association has been formed, in Montreal, with the main object of protecting the trade interests of the members. For the moment, the Association is confined to Montreal, but later it will embrace the Province of Quebec. The Association includes

every class of manufacturer making mill work. Mr. Wm. Rutherford, of Wm. Rutherford & Sons Co., Ltd., is president; Mr. J. P. Dupuis, of J. P. Dupuis, Ltd., vice-president; and Mr. A. Balfry, secretary.

A permit to erect a four-storey factory was recently issued to the W. Harris & Co., of Toronto. The building, which will be used for a glue factory, will be of brick and reinforced concrete construction, 145 ft. long and 66 ft. wide. Cost approximately \$150,000.

The Western Canada Aeroplane Company, Winnipeg, Man., has been capitalized at \$100,000, for the purpose of putting flying on a commercial basis. A site has been obtained and an aviation school will be established. Operations will commence as soon as a charter is granted.

The Australian Government has completed an aviation defence scheme and propose to establish training schools with aeroplanes and seaplanes. The plans include an airship section. The initial expenditure will be \$2,500,000, and the annual upkeep will amount to about the same.

A company known as the Piano Cases & Phonographs, Limited, Brantford, Ont., has recently been incorporated for the purpose of carrying on the business of woodworkers, and to manufacture and deal in pianos, phonographs, furniture, cabinet-work, office and store fixtures, etc. Capital \$100,000.

Incorporation papers have been issued to the Kitchener & Waterloo Manufacturers, Limited, Kitchener, Ont., with a capital of \$40,000. The provisional directors are G. C. H. Lang, E. C. Kabel, A. R. Kaufman, W. E. Woelfle, H. Nyberg, F. H. Ahrens, J. H. Baetz, B. K. Robinson, H. M. Snyder, E. J. Bauer, and J. Valentine.

Fire partially destroyed the plant of the Beaver Lake Mill, Chilliwack, B.C. The sawmill and shingle mill were both burned to the ground and it was only by wrecking the platform and plank roadway and thus making a break that the planing mill was saved. The loss is estimated at \$75,000. A fair amount of insurance was carried.

The North Battleford Manufacturing Company, North Battleford, Sask., have recently purchased the plant of the North Battleford Lumber Co. It is understood that the North Battleford Manufacturing Company do not contemplate branching into the retailing of lumber, but that the plant will be used in connection with their present business.

The Life Long Furniture Co., Ingersoll, Ont., J. P. Albrough, manager, has recently moved into a three-storey building, 25 x 40 feet. They will continue their line of high class chesterfields and easy chairs. Mr. Albrough states that the success they have had in the last few years shows that there is a market for something better in upholstered goods.

A fire which recently occurred at the plant of the Beck Manufacturing Company, London, Ont., did damage to the extent of \$10,000. Before the firemen reached the plant the fire had made considerable headway. The men were hampered by the dense acrid fumes of burning cedar and the danger from high voltage wires. The plant, devoted to the manufacture of cigar boxes, is owned by Sir Adam Beck.

Several changes have taken place in the organization of the Hanbury sawmill interests. Major George Hanbury is taking over the plant and interests at Brandon, Man. W. F. Hanbury, of Winnipeg, will control the Kamloops plant, while John Hanbury, the father of the two men, will continue in control of the Vancouver plant. A large sash and door plant is operated in Vancouver, in addition to the sawmill. It is planned to spend \$250,000 to increase production.

Mississippi Delta

Gum

Quartered and Plain
Red and Sap

Oak

Quartered and Plain
Red and White



The
KORN-CONKLING CO.
CINCINNATI, OHIO

Mills; Percy, Mississippi

"WELL BOUGHT IS HALF SOLD"

SPRUCE CRATING

WE HAVE IT AS FOLLOWS:

5/8 x 3" Merchantable
5/8 x 3" and up "

Practically 3" to 5" wide Strong to 12/16' long.
Plump thickness.

1 x 2" Bundled.
1 x 3"
1 x 4" and up.
1/2 x 3" Bundled.
1/2 x 4" "

We can serve you and
solicit your enquiries

**Canadian General Lumber
Company, Limited**

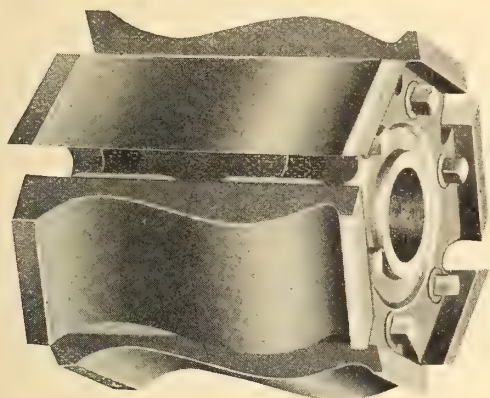
712 Bank of Hamilton Bldg.
TORONTO

MONTREAL OFFICE: 203 McGill Bldg.

Selling

Graves, Bigwood & Co.'s
Lumber, Lath and Box Shooks

The Diehl Adjustable Cutter Head
For Jointers, Shapers and Stickers



**National Sweeper Company Has Used Diehl
Cutter Heads for Over Six Years**
—Still Using Them

All of their moulding machines and two of their shapers are equipped with Diehl Cutter Heads. They say: "We have previously used numerous styles of heads and knives, but have found your adjustable head the most satisfactory of any."

The G. M. Diehl Machine Works
Wabash, Indiana

WANTED AT ONCE

Second-hand Veneer Press, 4 ft. 6 in. or 5 ft. wide, at least four sections. Reply giving price and particulars. Box 60, Canadian Woodworker.

FOR SALE

A few carloads of Spruce Crating 5/8" and 1" x 2", 3" and 4" wide, in random lengths.

Stadacona Box Company,
4-7 164 Grant St., Quebec, Que.

FOR SALE

Used

Woodworking Machinery

Planer and Matcher, No. 94 Berlin
15" Planer and Matcher, heavy, Cowan 227
24" Planer and Matcher, No. 10
End Matcher, C.M.C.
Box Board Matcher, Cowan 209
Buzz Planers 12" and 20"
Moulders, 10" and 6"
Tenoner, double copes, C.M.C.
Panel Raiser, American
Shaper, double spindle
Dovetailer, 12 spindle
36" Band Saw
Power Feed Rip Saws
Variety Saws
Cut Off and Swing Saws
Sander, 42" Triple Drum
Sanders, Panel, Disc and Drum, and Arm
Saw Grinder
Veneer Presses.

All above in first-class working condition. Some new, many used only a few weeks.

COWAN & CO. OF GALT LTD.

GALT, ONTARIO

For Sale

Subscriber offers for sale the following woodworking machinery, all of which are in first class condition and ready for immediate delivery.

- 1—10" McGregor Gourlay 4 side molder, with knives and Shimer heads.
- 1—10' Moore panel belt stroke sander.
- 1—48" 3 drum Columbia sander.
- 1—54" band resaw with automatic blade sharpener.
- 1—30" Whitney single surfacer, with sectional rolls.
- 1—2 spindle shaper, with knives.
- 1—2 spindle Yankee whittler.
- 1—2 spindle hor. boring machine.
- 1—2 spindle ver. boring machine.
- 1—single iron frame trim saw.
- 1—single iron frame trim saw.
- 1—gang emery grinder.
- 1—foot mitre machine.
- 1—hor. hollow chisel mortiser, and boring machine.
- 1—12 spindle dovetailer.
- 3—Reynolds automatic screwdrivers.
- 2—8 chanel open back Morgan nailers.
- 1—doz. cabinet makers' benches.
- 6—doz. hand screws.
- 1—veneer press.

A large quantity of wood pulleys.

Address enquiries Box 58, Canadian Woodworker, or 108 River St., Toronto, Ont.

4-5

FOR SALE

- 12" 4 side C.M.C. Molder.
- 32" Automatic Knife Grinder.
- No. 4 Waymouth Variety Lathe.
- 10 x 30 Open Back Morgan Nailer.
- 8 x 26 Open Back Morgan Nailer.
- 30" Sectional Roll Whitney Planer.

MAYDWELL MFG. Co.,
65 Saulters St., Toronto.

FOR SALE

- No. 90 Berlin High Speed Matcher (Profilers)
- No. 77 American High Speed Matcher
- No. 289 Berlin 54" Band Resaw
- No. 708 C.M.C. 48" and 42" Resaws
- Horizontal Band Resaw (2)
- Mershan Band Rip Saw
- 43 in. Royal Invincible Sander No. 401
- 60 in. Columbia Sander
- Berlin No. 177 Double Surfacer 30 x 8.
- Cowan Endless Bed Surfacer
- Cowan 12 in. and 6 in. Moulders
- Power Feed Rip Saws (2)
- Box Board Printer (3-color)
- Morgan Nailers (3)
- Box Board Matcher
- Lock Corner Outfit.
- Dovetail Box Outfit.

BOX 59, CANADIAN WOODWORKER

The Packing Problem

For a long time one bone of contention between manufacturer and dealer has been the matter of packing shipments so that they would arrive at destination in such condition that the dealer could put them on the floor, practically as opened.

Shipments often "come to pieces" through no fault of the manufacturer, the railroad in reality being the one to blame, but usually the manufacturer has to hold the sack anyway and straighten things out before the complaint is adjusted, so naturally he should be anxious to do everything possible to prevent such occurrences.

Granted that many manufacturers do splendid work in the packing room, and get warm praise from the dealer for exercising such care, isn't it true, too, that many plants are not careful enough in preparing the goods for shipment? In fact, as one foreman who has had experience in a number of plants located in different sections of the country remarked recently, it has always been a puzzle to him how some manufacturers devoted such untiring energy to procuring skilful workmen for the various processes of turning out the finished product, and exercised such careful supervision over them, when they allowed slack conditions to prevail in the shipping room and paid but scant personal attention to the starting of goods on their way to destination.

FOR SALE

Battery of "Bowser" Tanks for
Finish Room. Good Condition.

t.f. Box 32, Canadian Woodworker

PETRIE'S LIST

of NEW and USED
WOOD TOOLS
FOR IMMEDIATE DELIVERY

Wood Lathes

- 20" Sidney, "Famous."
- 16" Canada Machinery Corporation.
- 16" Cowan.
- 16" Sidney, "Famous."
- 14" Sidney, "Famous."

Wood Planers

- 30" Whitney pattern surfacer.
- 26" double surfacer.
- 24" Champion planer and matchers, moulding attachment (2).
- 24" Galt, planer and matcher.
- 24" Hermance, double surfacer.
- 24" MacGregor-Gourlay.
- 24" Sidney, "Famous," single surfacer.
- 18" Sidney, Famous.
- 12" Perfection, buzz.

Band Saws

- 36" MacGregor-Gourlay, circular, re-saw.
- 36" West Side, pedestal.
- 34" Gourlay, pedestal.
- 30" Ideal, pedestal (3).
- 30" Cowan, bracket.
- 30" Goldie & McCulloch, bracket.
- 27" Sidney, "Famous," pedestal.

Saw Tables

- No. 2 Famous, variety.
- No. 2 Crescent, boring attachment.
- No. 617 C.M.C. variety.
- Galt, iron frame, cut off.
- MacGregor Gourlay railway cut-off.
- Greenlee automatic cross-cut.
- 7 1/2" Fay & Egan, swing saw.
- 7" Williams, swing saw.
- Canadian, steel frame, pole saw.
- Vaughan, portable, drag saw.
- Champion, portable drag saw.

Mortisers

- Cowan, upright, power.
- Fay, upright, power, boring attachment.
- Galt upright, compound table.
- No. 5 New Britain, chain.
- No. 1 Smart, foot power.

Moulders

- 13" Clark-Demill four-side.
- 12" Cowan four side.
- 12" Woods four-side, inside.
- 10" Houston four side.
- 8" Dundas four-side.
- 6" Dundas sash sticker.

Clothespin Machinery

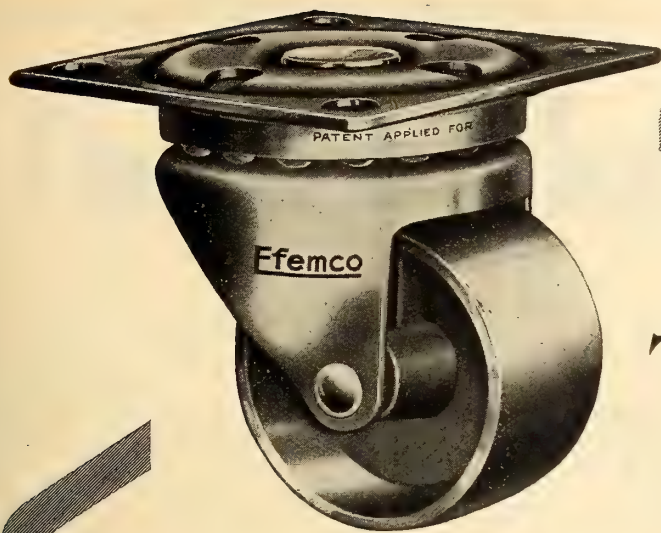
- Humphrey automatic lathes (5)
- Humphrey double slotters (3)

Miscellaneous

- No. 30 Famous, universal woodworker.
- Fay, horizontal, boring machine.
- Nos. 7 and 8 Sidney, post boring machines
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- Hall's automatic shingle machine.
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Efemco Products

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What

The Original Waterproof Glue. Comes in the form of a white powder. Easy to handle. Will keep indefinitely.

Where

Everywhere. Will produce a wood joint or panel of higher adhesiveness and resistance than animal and vegetable glue. Equally good for jointing together steel, brass, stone, glass, linoleum, cork, cloth, etc., to wood and leather.

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Easy to prepare. Simply add cold water to powder, mix and let stand for 15 minutes. That is all. It is then ready for use. Batch of veneer glue good for 5 hours, the same of joint glue good for a day's work, without the slightest deterioration. Easily applied with brush or spreader. Agreeable to use. Saves heat and dry kilns.

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Perkins Vegetable Glue

Uniform
Guaranteed



Patented
Satisfactory

Process and Product Patents covering Perkins Glue were granted July 2nd and March 19th, 1912, and are held valid and infringed by United States Circuit Court of Appeals.

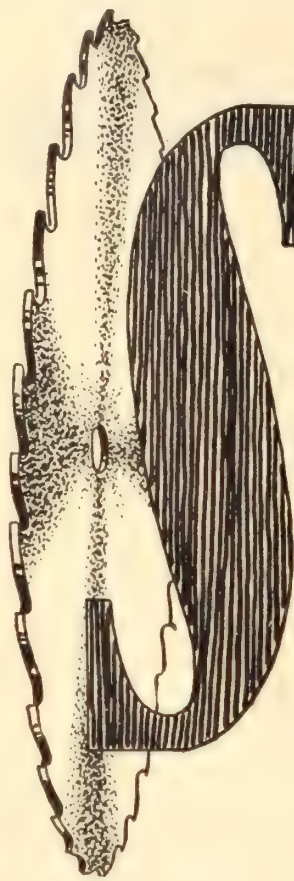
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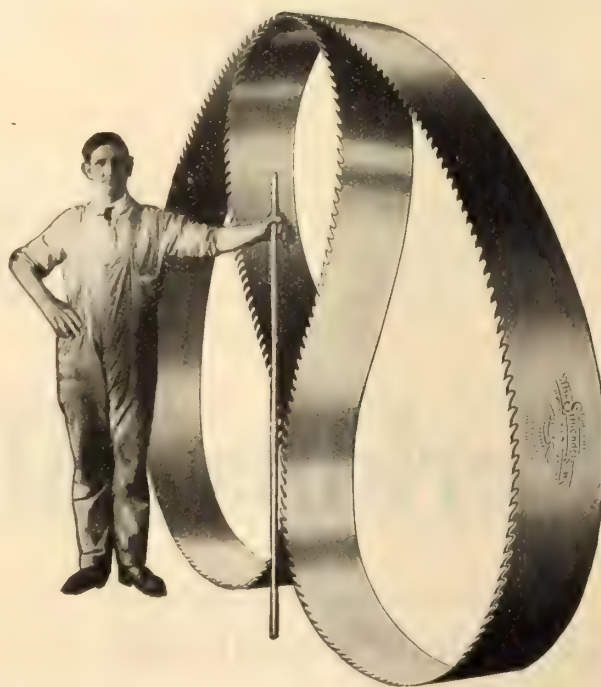
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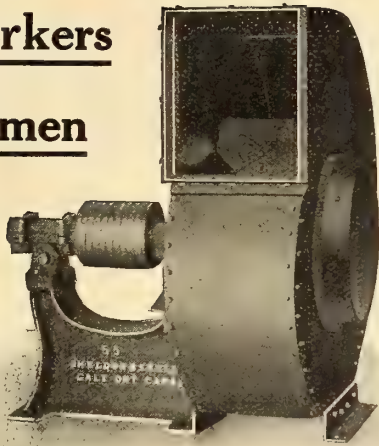
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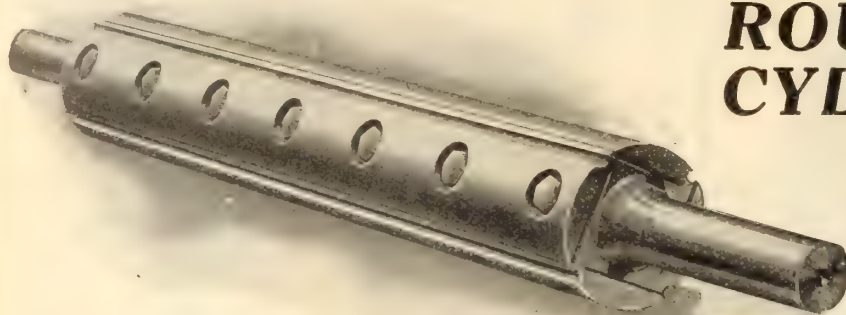
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We guarantee that the process used in the manufacture of Kane Vegetable Veneer Glue, and also the dissolving with **water and caustic soda** in the usage of same by the consumer, do not infringe any patents, and particularly the patents recently construed by the Court of Appeals of the Seventh Circuit, or the Decree of the U. S. District Court at Chicago, signed August 5, 1918.

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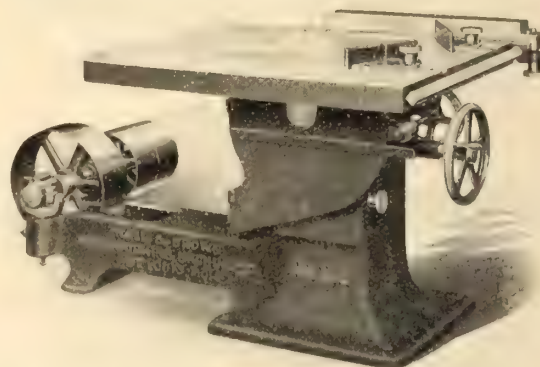
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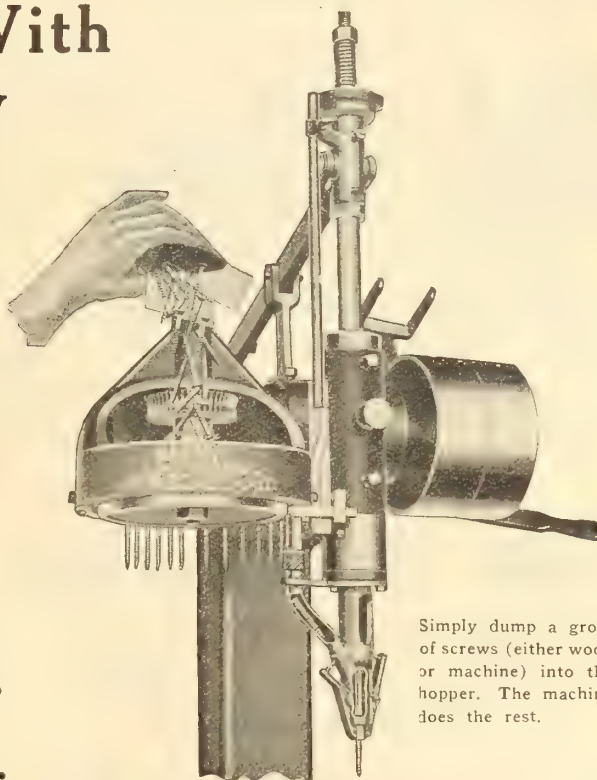
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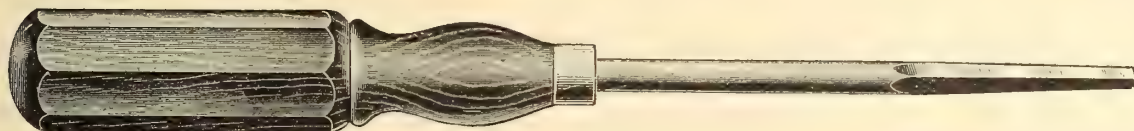
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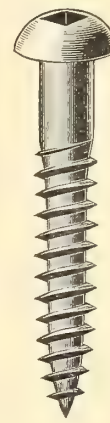
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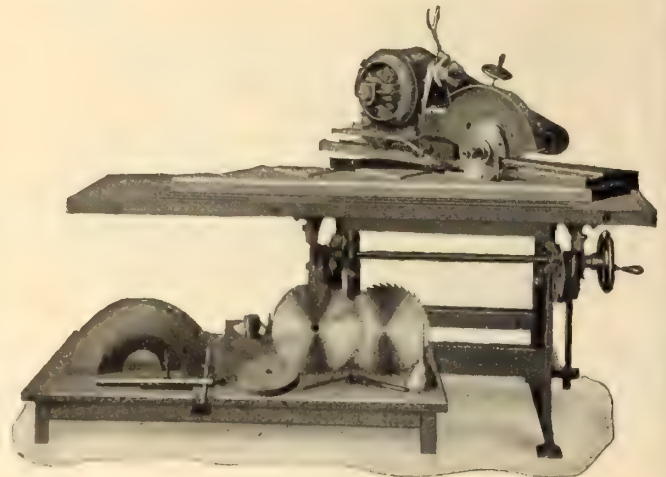
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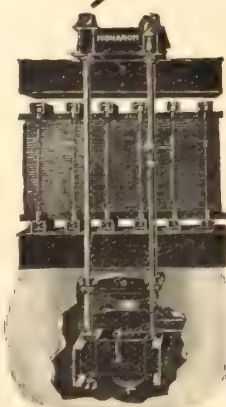
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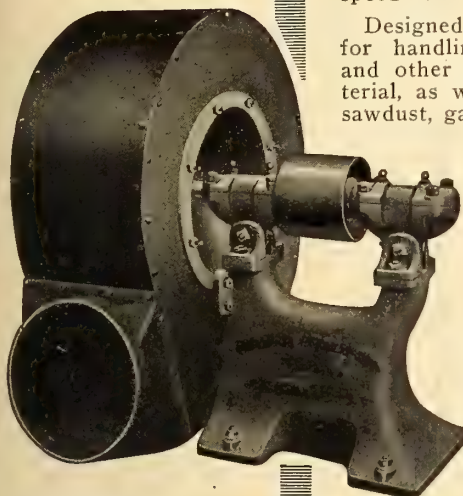
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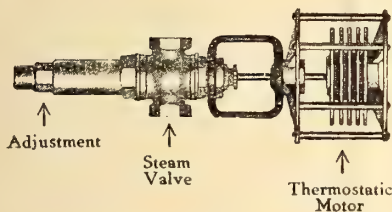
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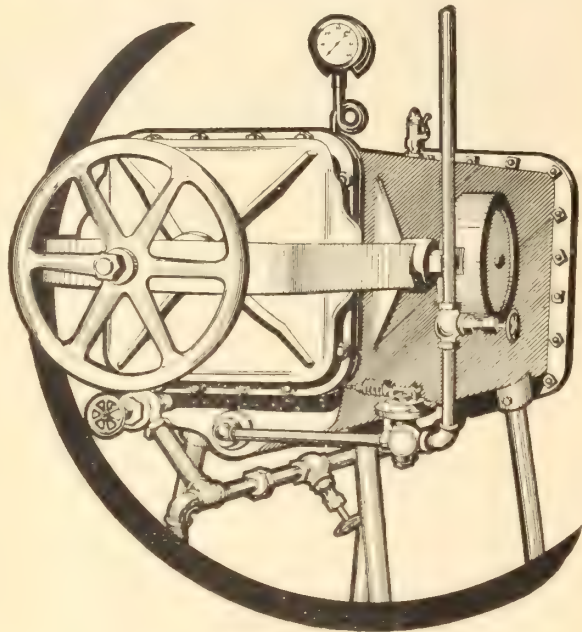
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Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

FLUTING HEADS

Fay & Egan Co., J. A., Cincinnati, Ohio.

FURNITURE CARVINGS

Decorators Supply Co., Chicago, Ill.

FURNITURE LEATHER

Eagle-Ottawa Leather Co., Grand Haven, Mich.

FURNITURE TRIMMINGS

Faultless Caster Co., Evansville, Ind.
Foster, Merriam Co., Meriden, Conn.
Weber, Knapp Co., Jamestown, N.Y.

GARNET PAPER AND CLOTH

Carborundum Co., Niagara Falls, N.Y.

GRAINING MACHINES

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDING WHEELS

Carborundum Co., Niagara Falls, N.Y.

GLUE

Bury & Co., Robt., Toronto, Ont.
Canada Glue Company, Brantford, Ont.
Certs Cold Glue Co., Detroit, Mich.
Kane Manufacturing Co., Chicago, Ill.
Perkins Glue Company, South Bend, Ind.

GLUE CLAMPS

Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Neilson & Company, J. L., Winnipeg.

GLUE HEATERS

Fay & Egan Co., J. A., Cincinnati, Ohio.
International Electric Co., Indianapolis, Ind.
Jackson, Cochrane & Company, Kitchener, Ont.
Pringle, R. E. T., Toronto, Ont.

GLUE JOINTERS

Canada Machinery Corporation, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

Basswood

1 in., 1 1/4 in., and 1 1/2 in. Dry Basswood

Dry Birch Stock

We offer in Birch and Maple
End Stock 1 x 7 in., and wider, 1 x 6 in.

All thicknesses and grades in
MAPLE, BIRCH, ELM, BASSWOOD
and **BROWN ASH**

Spruce, Hemlock and Pine

Can saw to order at MacDonald's Siding
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Let us Quote on Your Requirements

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TORONTO, CANADA

18 Toronto St.

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Mill Cull Pine and Spruce

Crating Pine and Spruce

also Dressing, Shop and Good
Canadian White Pine

The Door Carrier System



**Makes your dry-kiln doors
steam-tight and saves time,
heat, trouble and money.**

Carrier lifts door clear of kiln
and carries it down track. Re-
turning, deposits door to rabbet-
ed joint, where it is held steam-
tight by its own weight. Appli-
cable to old or new kilns.

Ask for catalogue.

**DRY KILN
DOOR CARRIER CO.**

1117 Cornell Ave.
INDIANAPOLIS, IND.

The Modern Veneer Tape

"Easimooov"

Patented

FOR OUTSIDE WORK OR FOR

SPECIALLY CURVED WORK

A new tape which was quickly recognized by
veneer users as supplying a real demand.

Holds Veneer Perfectly, yet can be removed in-
stantly after having served its purpose, without
being sanded.

**Saves Time, Labor
and Expense**

The kind of tape that pleases the operator.

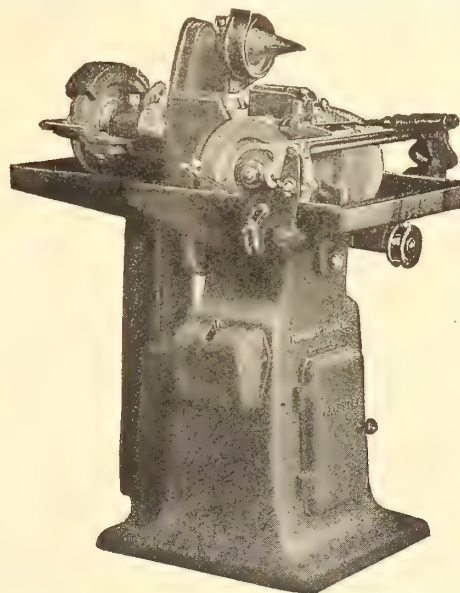
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Veneer Tape Specialists

Main Offices and Mills, BROOKFIELD, Mass.

Mummert-Dixon Oilstone Grinders

THE MODERN EDGE TOOL SHARPENING MACHINE
THE STANDARD FOR ALL WOOD-WORKING SHOPS



No. 481 MOTOR OR COUNTERSHAFT DRIVE

An automatic attachment for grinding long knives
can be furnished with this machine.

THE FIVE LEADING FEATURES

1, Coarse Oilstone Wheel. 2, Fine Oilstone Wheel.
3, Grinding Cone. 4, Leather Wheel. 5, Emery Wheel.

ALL AT YOUR FINGERS ENDS

Send for full descriptive bulletin.

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220 S Philadelphia St.

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HANOVER, PA.

"Canadian Woodworker" Buyers' Directory—Continued

GLUE SPREADERS

Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GLUE ROOM EQUIPMENT

Perrin & Company, W. R., Toronto, Ont.

GLUING MACHINES

Francis & Co., Chas. E., Rushville, Ind.

GRINDERS (Cutter)

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

GRINDERS (Knife)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GRINDING WHEELS

Carborundum Co., Niagara Falls, N.Y.

GROOVING HEADS

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.

GUM LUMBER

Aberdeen Lumber Co., Pittsburg, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
Anderson-Tully Co., Memphis, Tenn.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bellgrade Lumber Co., Memphis, Tenn.
Brown & Co., George C., Memphis, Tenn.
Churchill-Milton Lumber Co., Louisville, Ky.
Cornelius Lumber Co., St. Louis, Mo.
Gum Lumber Association, Memphis, Tenn.
Heyser Lumber Co., W. E., Cincinnati, Ohio.
Holly Ridge Lumber Co., Louisville, Ky.
Paepcke-Leicht Lumber Co., Chicago, Ill.
Probst Lumber Co., Cincinnati, Ohio.
Thomas & Proetz Lumber Co., St. Louis, Mo.
Wisconsin Lumber Co., Chicago, Ill.

HAND SCREWS

Fay & Egan Co., J. A., Cincinnati, Ohio.

HANDLE & SPOKE MACHINERY

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Whitney & Son, Baxter D., Winchendon, Mass.

HARDWARE

Laidlaw Bale-Tie Co., Hamilton, Ont.
Weber, Knapp Co., Jamestown, N.Y.

HARDWOOD LUMBER

Aberdeen Lumber Co., Pittsburgh, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
American Oak Mfrs.' Assn., Memphis, Tenn.
American Walnut Association, Washington, D.C.
Anderson-Tully Co., Memphis, Tenn.
Atlantic Lumber Company, Toronto, Ont.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bellgrade Lumber Co., Memphis, Tenn.
Bonner & Sons, J. H., Memphis, Tenn.
Brown & Company, Geo. C., Memphis, Tenn.
Burns & Knapp Lumber Co., Conneautville, Pa.
Bury & Company, Robert, Toronto, Ont.
Cornelius Lumber Co., St. Louis, Mo.
Canadian General Lumber Co., Toronto, Ont.
Churchill-Milton Lumber Co., Louisville, Ky.
Darby Hardwood Lumber Co., Memphis, Tenn.
Dooley Lumber Co., F. T., Memphis, Tenn.
Elgie & Jarvis Lumber Co., Toronto, Ont.
Evansville Band Mill Co., Evansville, Ind.
Gayoso Lumber Co., Memphis, Tenn.
Hart & McDonagh, Toronto, Ont.
Heyser Lumber Co., W. E., Cincinnati, Ohio.
Holly Ridge Lumber Co., Louisville, Ky.
Hunt, Wellington & Smith, Nashville, Tenn.
Kersley, Geo., Montreal, Que.
Korn-Conkling Co., Cincinnati, Ohio.
Lawrence & Co., P. J., St. Louis, Mo.
Long-Knight Mfg. Co., Indianapolis, Ind.
Maley & Wertz, Evansville, Ind.
McLennan Lumber Co., Montreal, Que.
Memphis Band Mill Co., Memphis, Tenn.
Mowbray & Robinson, Cincinnati, Ohio.

Paepcke Leicht Lumber Co., Chicago, Ill.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City.
Percy E. Heeney, Kitchener, Ont.
Pickrel Walnut Co., St. Louis, Mo.
Probst Lumber Co., Cincinnati, Ohio.
Shafer Hardwood Co., John I., South Bend, Ind.
Spencer, C. A., Montreal, Que.
Stark & Co., Jas. E., Memphis, Tenn.
Stimpson & Co., J. V., Owensboro, N. Y.
Wisconsin Lumber Co., Chicago, Ill.

HYDRAULIC VENEER PRESSES

Perrin & Company, Wm. R., Toronto, Ont.

JOINTERS

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

LATHES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.

MACHINE KNIVES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

METALINE NAILS

Dominion Tack & Nail Co., Galt, Ont.

MITRE SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

MOULDERS

Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Vonnegut Machinery Co., Indianapolis, Ind.

MULTIPLE BORING MACHINES

Root Company, B. M., York, Pa.

MULTIPLE BOXING MACHINES

Fay & Egan Co., J. A., Cincinnati, Ohio.
Nash, J. M., Milwaukee, Wis.

OIL STONE GRINDERS

Mummert-Dixon Co., Hanover, Pa.

PANELS

Hay & Co., Limited, Woodstock, Ont.
Waetjen & Co., George L., Milwaukee, Wis.

PATTERN SHOP MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PERIOD TURNINGS

Walter & Sons, J., Kitchener, Ont.

PLANERS

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLANING MILL MACHINERY

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PRESSES (Veneer)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Co., Wm. R., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

PULLEYS

Bernard Industrial Co., A., Fortierville, Que.

RESAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RIM AND FELLOE MACHINERY

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.

RIP SAWING MACHINES

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RUBBING MACHINES

DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.
Paasche Air Brush Co., Chicago, Ill.

SAFETY DEVICES

Cowan & Company, Galt, Ont.

SANDERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SILVER

Band Saws, Jointers, Saw Tables, Swing-Saws, Etc.

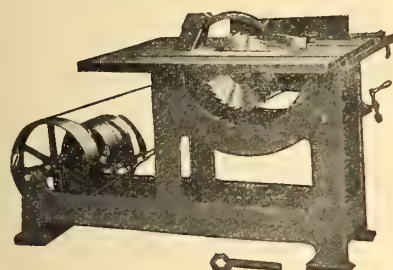


We gained our first customers by our moderate prices. We held these customers and gained new ones by a continuation of the fair-price policy and by the splendid performance of the machines themselves.

THE SILVER MFG. CO.

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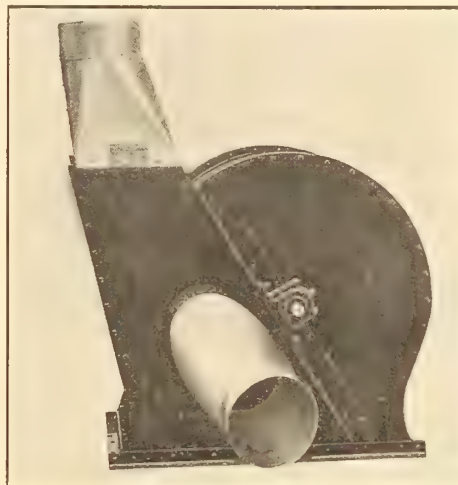
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**Catalog
No. 63**

explains every
Silver Machine.
We'll send it
promptly if you
will just ask for
it.

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Patented

The service which is rendered by "Foster Fans" is undoubtedly the most efficient. It handles wet or dry material with the same rapidity, thus making it an ideal fan for any place for which a fan is needed. The fan wheel is so constructed that material entering the fan is immediately discharged without passing through or around the wheel. "Foster Fans" are practically indestructible. Write us for our bulletin explaining the merits of the "Foster Fan" more fully and giving a list of users.

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Thrift Stamps and "Maple Leaf" Saws

Every man, woman and child in Canada should buy **Thrift Stamps**. Every carpenter, woodsman and mill operator should buy **Maple Leaf Saws**.



WHY ?

First—Both are needed for Reconstruction work.

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"MAPLE LEAF" SAWS once used always used, because they Give Satisfaction in Service.

WE make GOOD SAWS and try to make THE BEST.

We manufacture all kinds of Band, Circular, Crosscut, Grooving, Concave and Hand Saws.

SHURLY-DIETRICH, LIMITED

GALT, CANADA

Store and Repair Branches at VANCOUVER and OTTAWA



"Canadian Woodworker" Buyers' Directory—Continued

SASH, DOOR & BLIND MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAWS

Atkins & Co., E. C., Indianapolis, Ind.
Radcliff Saw Mfg. Company, Toronto, Ont.
Shurly-Dietrich, Ltd., Galt, Ont.
Simonds Canada Saw Co., Montreal, Que.

SAW SWAGES

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.

SAW TABLES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SCRAPING MACHINES

Canada Machinery Corporation, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.

SCREW DRIVING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Reynolds Machine Co., Massillon, Ohio.

SCROLL SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SECOND-HAND MACHINERY

Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

SHAPERS

American Woodworking Machinery Company, Rochester, N.Y.
Cowan & Company, Galt, Ont.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS

Canadian Blower & Forge Co., Kitchener, Ont.
Sheldons Limited, Galt, Ont.
Toronto Blower Company, Toronto, Ont.

SHOOK BUNDLER

Neilson & Company, J. L., Winnipeg, Man.

SPRING MATTRESS FRAMES

Newman Sons, J. P., Warton, Ont.

SPRINGS FOR UPHOLSTERY

Weber, Knapp Co., Jamestown, N.Y.

STAINS

Ault & Wiborg, Toronto, Ont.
Marietta Paint & Color Co., Marietta, Ohio.

SINGLE SPINDLE BOXING MACHINES

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.

STAVE SAWING MACHINE

Whitney & Son, Baxter D., Winchendon, Mass.

SURFACERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES

Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES

Walter & Company, B., Wabash, Ind.

TACKS AND NAILS

Canada Tack & Nail Co., Hamilton, Ont.
Dominion Tack & Nail Co., Galt, Ont.

TEMPERATURE REGULATORS

Canadian Powers Regulator Co., Toronto, Ont.

TENONING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TIME CLOCKS

International Business Machines Co., Toronto, Ont.

TRIMMERS

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRUCKS

Sheldons Limited, Galt, Ont.
National Dry Kiln Co., Indianapolis, Ind.

UPHOLSTERER'S FLOCK AND BATTING

Bauers Limited, Waterloo, Ont.

VARNISHES

Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg Company, Toronto, Ont.
Jamestown Wood Finishing Co., Jamestown, N. Y.
Penfound Varnish Co., Toronto, Ont.

VARNISH SPRAYERS

DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

VENEERS

Bury & Company, Robert, Toronto, Ont.
Central Lumber Co., Indianapolis, Ind.
Christman Veneer & Lumber Co., St. Louis, Mo.
Dean Spicker Company, Chicago, Ill.
Empire Veneer Company, Chicago, Ill.
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Geo. Kersley, Montreal, Que.
Korn-Conkling Co., Memphis, Tenn.
Long-Knight Lumber Co., Indianapolis, Ind.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Nartzik, J. J., Chicago, Ill.
National Veneer & Lumber Co., Indianapolis, Ind.
North Vernon Lumber Co., North Vernon, Ind.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Roberts & Co., John N., New Albany, Ind.
Southern Veneer Mfg. Co., Louisville, Ky.
Thompson Veneer Co., W. T., Edinburgh, Ind.
Toronto Veneer Company, Toronto, Ont.
Veneer Manufacturers Co., Chicago, Ill.
Waetjen & Co., George L., Milwaukee, Wis.

VENEER TAPE

Ideal Coated Paper Co., Brookfield, Mass.

VENTILATING APPARATUS

Canadian Blower & Forge Co., Kitchener, Ont.
Sheldons Limited, Galt, Ont.

VENEER JOINTERS

Garlock-Walker Machinery Co., Toronto, Ont.

VENEER MACHINERY

Garlock-Walker Machinery Co., Toronto, Ont.

VENEER PRESSES (Hand and Power)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Company, Wm. R., Toronto, Ont.

VICES

Fay & Egan Co., J. A., Cincinnati, Ohio.

WOOD FINISHES

Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg, Toronto, Ont.
Jamestown Wood Finishing Co., Jamestown, N.J.
Penfound Varnish Co., Toronto, Ont.

WOOD SCREWS

Robertson Mfg. Co., P. L., Milton, Ont.

WOOD TURNING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Mattison Machine Works, Rockford, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES

Fay & Egan Co., J. A., Cincinnati, Ohio.

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*If the Slide Does Not Work Properly
Your Whole Table is Condemned*

**Wabash Slides insure
Satisfied Customers**

SLIDE MAKING is a SPECIALTY BUSINESS

We can Furnish Better Slides for Less Cost

**Eliminate Slide Troubles by using
WABASH SLIDES**

MADE BY

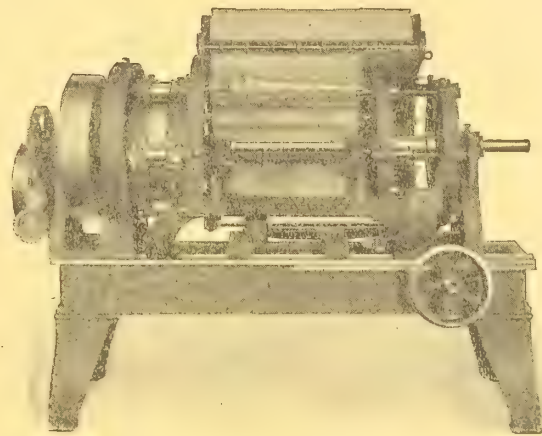
B. Walter & Company

Edsall St., Wabash, Ind.

Canadian Representative:

A. B. CAYA, 28 King St. East, Kitchener, Ont.

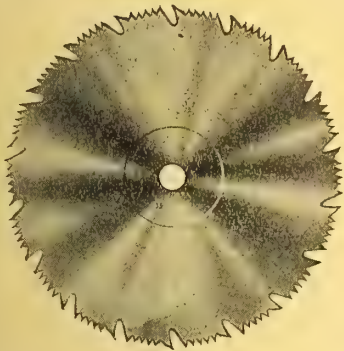
Are You Equipped



to give your customers the best service?
Not unless you have a Nash Sander for
your furniture and chair turnings.

It greatly improves the product and
reduces sanding costs to a minimum.

J. M. NASH, Milwaukee, Wis.



ATKINS

STERLING QUALITY

SAWS and KNIVES

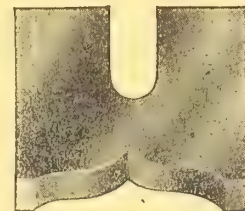
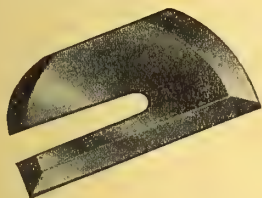
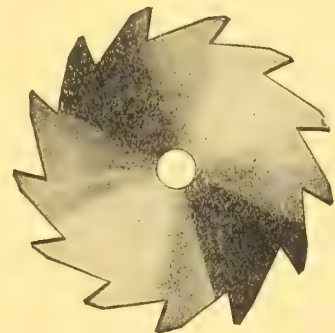
The best steel—the most careful and
accurate workmanship—the equipment
that will eventually save you money.

Atkins Sterling Quality Saws and Knives
are proving their superiority by competi-
tive tests in the largest plants of the
country. We welcome your most care-
ful investigation, as we know the satis-
faction that will result.

Write to-day for our Knife Booklet "CW"
and Pattern Template Paper.

E. C. ATKINS & CO.

Makers of Sterling Saws



Factory—HAMILTON, Ont.

Vancouver Branch—109 Powell Street

Double the Capacity of your Rubbers

With the Mattison Portable Electric Varnish Rubbing Machine

The Improved Model Mattison Rubber is entirely portable—It operates from any Electric Lamp Socket. It is a compact, complete unit in itself, requiring no piping or extra power plants. This means a low installation cost. It uses power only when working, and very little at that.

The entire mechanism is completely encased in aluminum, durable and dirt proof, yet light in weight and convenient to handle. All bearing surfaces are protected from slop and grit splashed up by the action of the Rubbing blocks.

Because it is mechanical, it keeps to a uniform rubbing "gait" all day — is just as efficient at the end of the day as in the early morning. But the hand Rubber gets tired and slows up proportionately. Very slight physical exertion is required to guide the machine over the work.

One man with the Electric Rubber will cover twice the surface possible by hand, and the finish will be even more uniform. Equally efficient for either oil or water rubbing. Special pads may be attached to utilize machine for sanding flat surfaces which cannot be reached by the regular belt sanders.

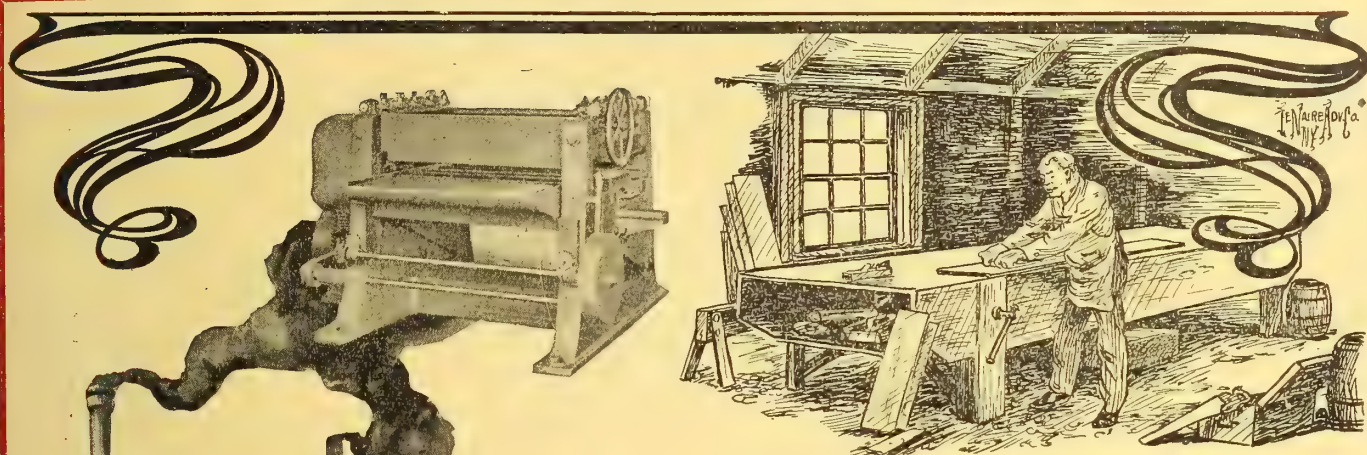


Write to-day for Illustrated Bulletin

Mattison Machine Works, Rockford, Illinois, U.S.A.

CANADIAN WOODWORKER

and
Furniture Manufacturer



CRAPING Flat Hard Wood Surfaces, Solid or Veneered
on a

WHITNEY Wood Scraping Machine

is a faster process;—costs are lower and results better than you can obtain by any other means or method—sanding or hand scraping.

☐ Ask us for some samples of hard woods passed through a Whitney Scraper so that you can see the beautiful grain effects—the open pores of the wood—the smooth even surface without scoured out spots and rounded corners.

☐ Or, better still, send us some samples of the woods you are working and compare the finish of Whitney Scraper work we send you with the work you do by your method.

☐ The low cost of operating a Whitney Scraper and the speed at which it works are worth considering. *Write us about it.*

BAXTER D. WHITNEY & SON, Winchendon, Mass.

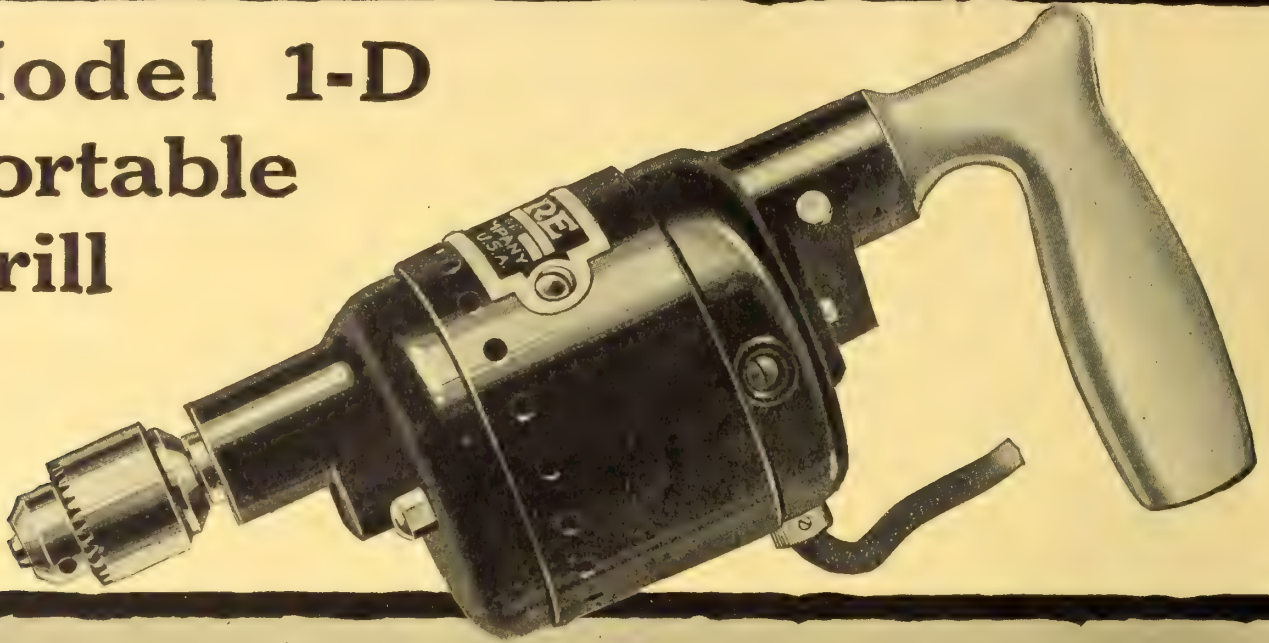
H. H. Plummer & Co.
451-453 Monadnock Bldg.,
San Francisco, Cal.

New York Office:
World's Tower Bldg., 110 West 40th St.
C. L. Babcock, Manager.

Canadian Representatives:
H. W. Petrie, Limited,
Toronto, Ontario.

Featuring Fire Prevention and Protection

Model 1-D Portable Drill



HANDY—ECONOMICAL—EFFICIENT

Specifications:

Length—10 inches.

Weight—4¾ pounds.

Capacity—Steel, 0 to ½". Wood and alloys, 0 to ¾".

Motor—Universal, on either direct or alternating current.

Diameter of Motor—3⅝ inches.

Spindle—Offset from center ⅜".

Helical Gears.

Aluminum Handle.

Complete with 10-ft. cord, plug, switch and chuck.

Jacob's Chucks used as a regular equipment.

FOR speed in drilling and counter-sinking small holes, this tool is just what you need. It can be used on any kind of material—steel, iron, brass, aluminum or wood—and gives lasting service.

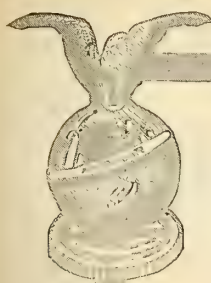
If your dealer cannot supply you with the Model 1-D, tell us about your requirements.

Wisconsin Electric Company
7112 Sixteenth Street, Racine, Wisconsin, U. S. A.

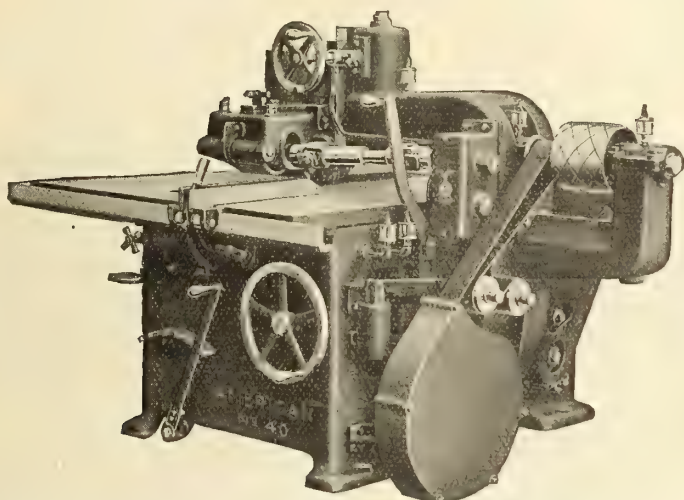
DUMORE GEARED ELECTRIC DRILLS

A Page from Our Catalog

AMERICAN WOOD WORKING MACHINERY COMPANY



American No. 40 Chain-Feed Edging Saw

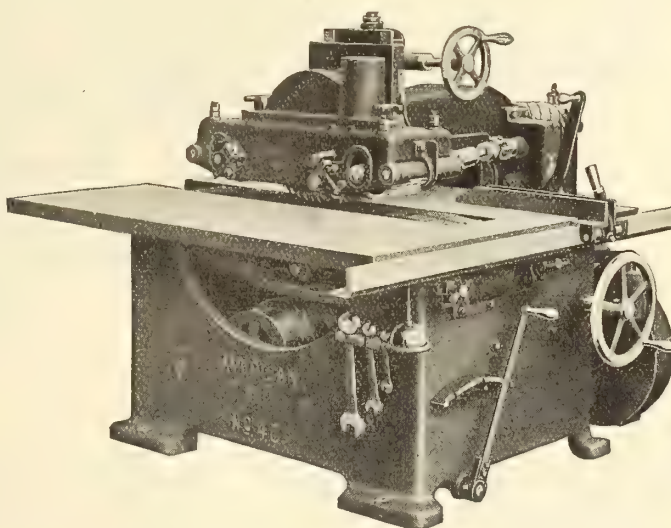


THIS is an extremely rigid and well-designed machine for accurately edging crooked and uneven stock and cutting out checks and imperfections. It will edge lumber straight any length without the use of the guide. It will effect a great saving in time and labor in such work as core stock, caskets and

the cheaper grades of furniture, for in all such work the stock is ready to glue up as soon as it comes from the machine. It will rip to widths, leaving the edges perfectly straight, at a rate equal to the output of two or three hand-fed saws. All the adjustments are in sight and are made from the front of the machine.

Capacity

Will rip stock as short as 8-in. and to 24-in. wide. Distance from saw to left hand of table 24-in. Largest diameter of saw used 14-in.; smallest, 10-in. A 14-in. saw will rip stock 4-in. thick and under. A 12-in. saw is furnished with the machine. Hole in saw 1 $\frac{5}{8}$ -in. with $\frac{5}{8}$ -in. dowel pin, 1 3-16-in. from center of saw to center of pin.



CANADIAN SALES AGENTS

Garlock-Walker Machinery Company

Limited

32 Front Street West, TORONTO, ONT.

Toronto

Montreal

Winnipeg

NEW YORK

ROCHESTER

CHICAGO

NEW ORLEANS

SAN FRANCISCO

PORTLAND ORE.

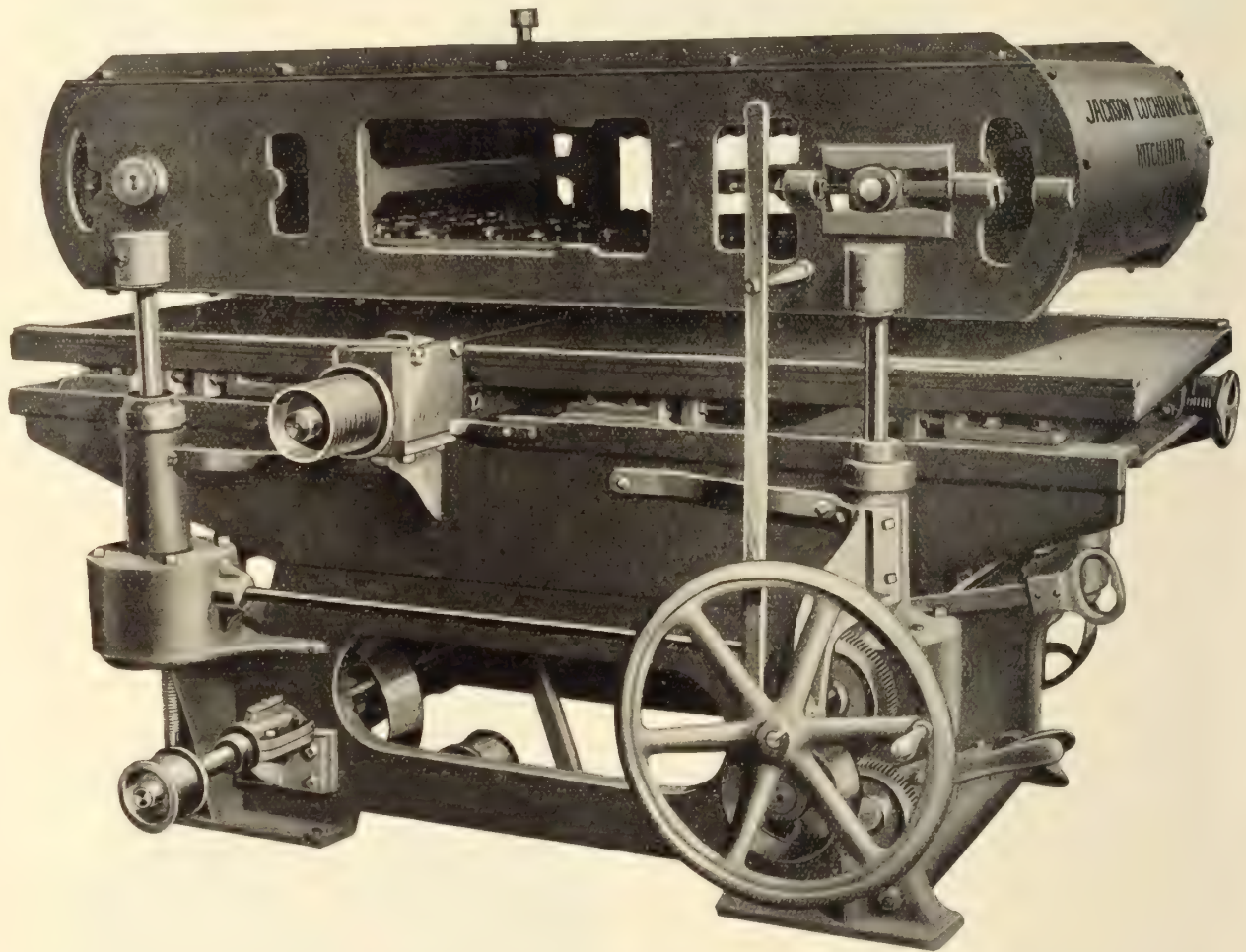
The Herzog Self-Feed Jointer

means

Increased Production
Small Floor Space

Simplicity of Operation
Safety to Employees

Does Four Times the Work of the Hand Jointer

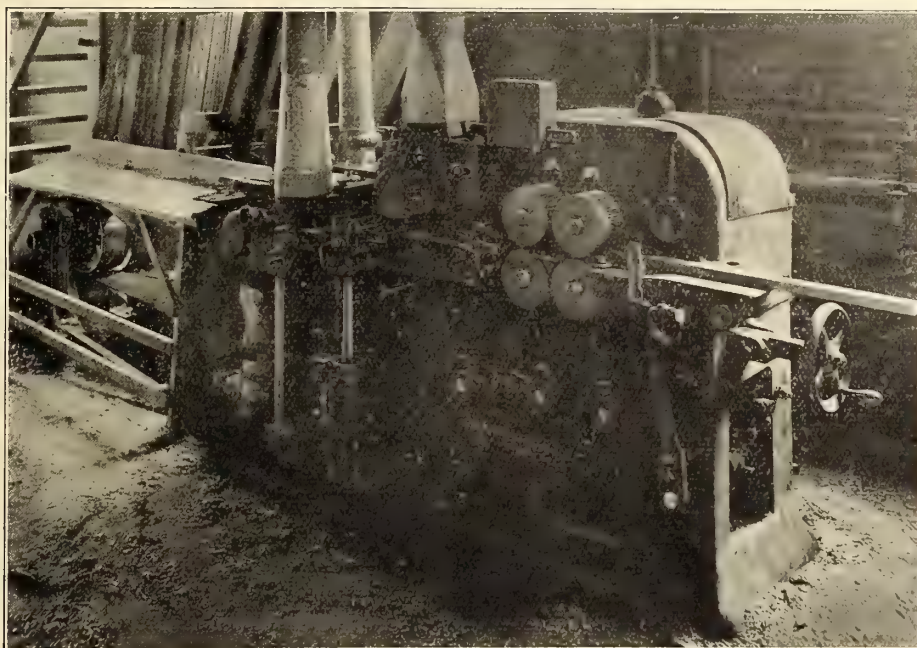


Our No. 34 Herzog Jointer, illustrated above, is one of the most efficient machines on the market to-day. It is appreciated by the manufacturer and employees alike, because, while it will produce from three to five times as much work as the hand jointer, it does not require skilled operators, but eliminates the danger so common to other makes. It can be operated by two boys. It will handle stock varying in width from 1 inch to the full width of the jointer, will feed fast or slow, takes only one-fourth the floor space of hand jointers, and requires only one-fifth of the sharpening of the knives. It is fitted with power feed raising and lowering attachment, with cylinder double belted and driven from both ends.

If interested in reducing your costs, write us.

Jackson, Cochrane & Company
KITCHENER - CANADA

The Yates Type C-3 Moulder



As installed in plant of A. Entenman, Brooklyn, N. Y.

"The Invariable Choice of the Man Who Knows."

This machine is built for long service and high production. The base is a one-piece casting. The bed is of hardened steel and is double reversible. The feed rolls are individually driven. The lubricating system is very efficient; all grease cups in plain sight. Easily set up and adjusted. Feeds up to 100 feet per minute.

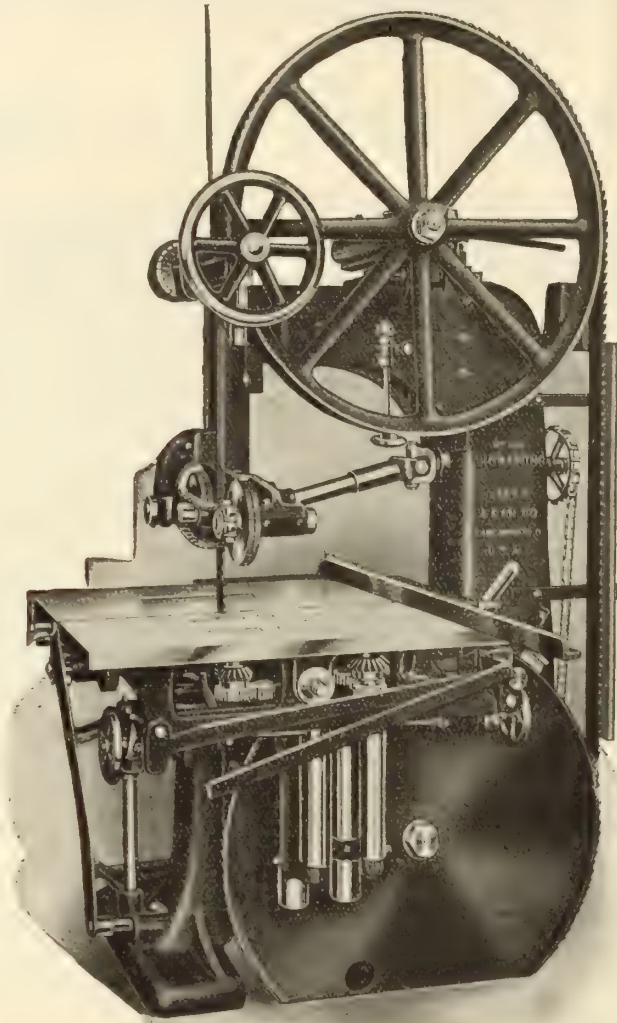
*Write for our large, illustrated "C-3"
Circular. Sent free on request.*



P. B. Yates Machine Co. Ltd.

HAMILTON, ONT. CANADA

U.S. PLANT—BELOIT, WIS.



Ready in a Moment to Either Rip or Resaw

If your combined ripping and resawing does not exceed 50 to 60 M lineal feet per day on soft woods, or 20 to 25 M feet on hard woods, you do not need to put in two separate machines.

A Fay-Egan No. 146 will take care of all this work in the most economical manner.

At the very beginning you save the price of one machine.

You save the space occupied by one machine.

You realize the highest return on your investment, as the one machine is kept busy all the time.

By simply reversing the table and raising or lowering the ripping rolls, the No. 146 is changed from a rip to a resaw or from a resaw to a rip saw—it takes but a moment to do this.

As a rip saw, it will handle material up to 24 inches wide.

As a resaw, it will cut to the center of 8 inches and up to 18 inches under the guide.

The No. 146 has all of the advantages of a separate band rip or resaw.

You can find out more about this economical machine by asking for Bulletin N-3

J. A. FAY & EGAN CO.

153-163 W. Front St.

CINCINNATI, O.

The "Shimer Limited" Expansion Head

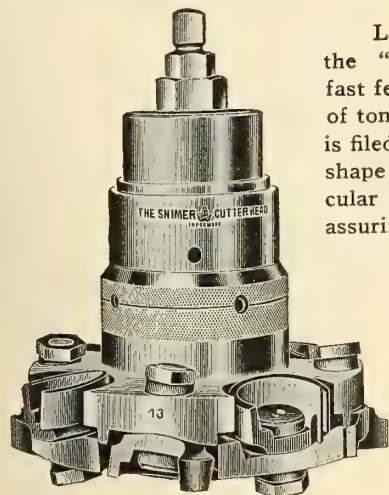


Fig. 627

Let us draw your attention to the advantages of using the "SHIMER CUTTER HEAD" for general Mill and fast feed Planer work. The Cutter is turned to cut the shape of tongue and groove desired, so that to sharpen the cutter it is filed or ground on its face, guaranteeing the user the same shape of cut during the life of the cutter. The bit being circular has from $3\frac{1}{2}$ in. to 5 in. cutting length to the cutter, assuring long wearing life to the cutters.

Note that the cutter, being fastened to a concave seat on a compound angle, assures the user of the proper clearance of cutters, consequently they never burn.

These heads are fitted with or without the Self-Centering Sleeve, and made Expansion or Solid, to suit the customer's wishes.

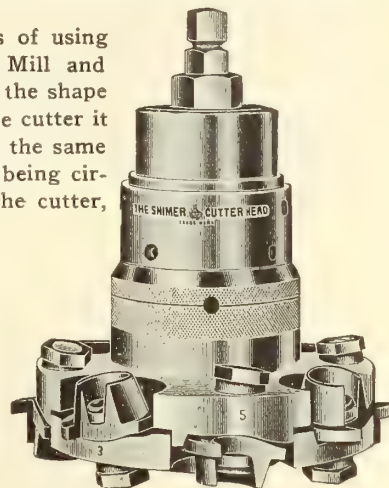


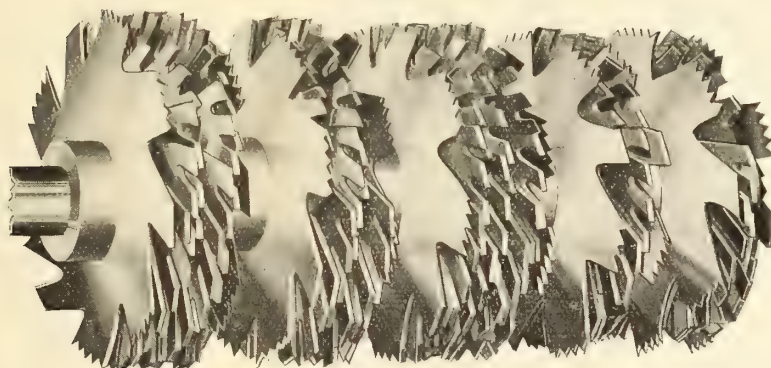
Fig. 268

Shimer Heads have been in use for sixty years, and their reliability and reputation have spoken for them in the past. Let us know your wants and we will guarantee their reliability at the present.

SHIMER CUTTER HEAD CO. OF CANADA, LIMITED

Successors to Samuel J. Shimer & Sons, Inc.

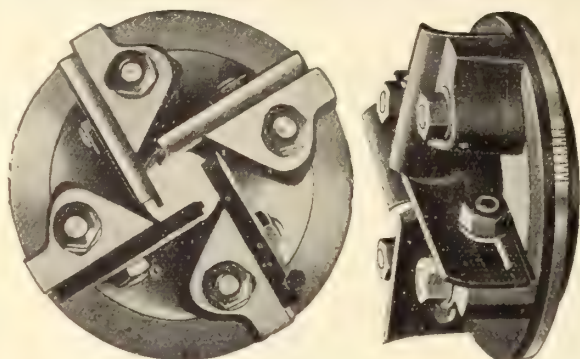
GALT, ONTARIO



For some years we have specialized on several lines of saws and cutters for box factory, gramophone cabinet and similar work. Our Beaver Dado as illustrated above has won great favor with the trade owing to its adaptability. The combination of bevel wing outside cutters with our multiple tooth inside cutter assures the user that our dado will cut across grain and not chop, thus being far ahead of the one tooth or hook type.

We solicit a trial order to prove their worth

Radcliff Saw Manufacturing Company, Limited
1550 Dundas Street St. West, TORONTO

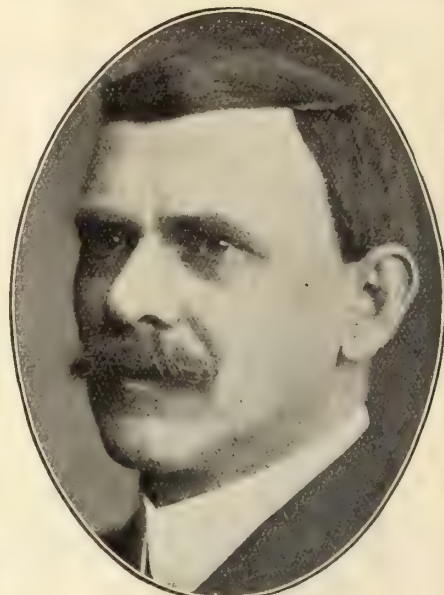
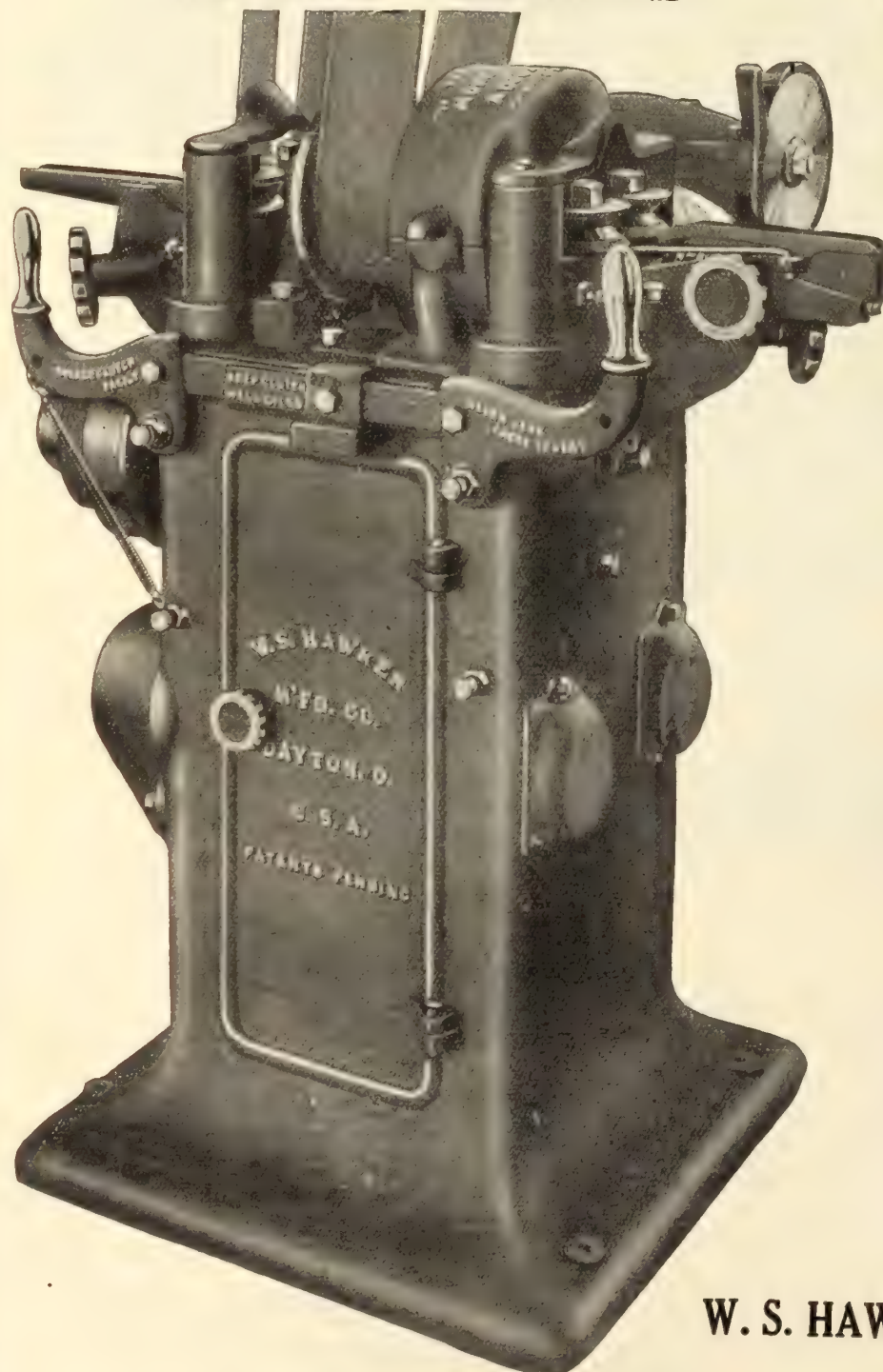


UNIVERSAL ADJUSTABLE CUTTER HEAD Patented.
Infringements (maker or user) will be vigorously prosecuted.

Two Heads

that have put
100% more profit
in the production
of Dowel Stock.

FOR SHIP TREENAILS



W. S. HAWKER.

Inventor and Designer of the World's most
efficient Tubular Turning Machinery

THE

Money Maker Adjustable Rod and Dowel Machine

The machine that is sent under a guarantee
to show you a gain of from 100 to 400 per cent.
before you buy it.

The improved dowel machine that 90 per
cent. of the largest and oldest machinery build-
ers and dealers now endorse and recommend in
preference to the solid chuck machines they
themselves previously built.

One cutter head turns from 1/4 in. to 2 in.
diameter.

Turns hard or soft wood equally well.

Handles heavy, oversized squares.

No choking of the cutter head.

Smooth stock.

Accurate sizes.

Works stock as short as five inches.

Rolls automatically centre variations in
squares.

Machines built to turn from 1/8 to 6 in.

We want to hear from every user of a solid
chuck dowel machine.

We can save you from one dollar out of
every two, to four out of every five, that the
operation of solid chuck machines costs you.

Engagements for competitive test solicited.

Formal orders not solicited. All sales made
after demonstration.

The only question is, are you willing to cut
cost of your dowel turning to one-half or one-
third of what it costs with any make of solid
chuck machine?

Machine delivers the goods before you buy.

State conditions of stock closely.

Special conditions require special equipment.

W. S. HAWKER MFG. COMPANY
DAYTON, OHIO.

DEFIANCE

IF IT'S A WOOD HANDLE—THERE ARE
DEFIANCE MACHINES TO PRODUCE IT

Accuracy and Production Capacity are the two big factors in handle making. Defiance machines have, therefore, been designed especially to produce handles accurately and at a high rate of production. If it's a handle of any description—there's a "Defiance" machine to produce it in correct shape and at the lowest possible production cost.

These machines are made automatic and semi-automatic to turn broom, fork, rake and hoe handles, golf sticks, curtain, flag and pike poles, fishing rods, whip stocks, Vienna chair backs, etc. They make handles for small tools, hammers, hatchets, picks, axes, mauls, plows, etc.

Write for illustrated and descriptive matter.

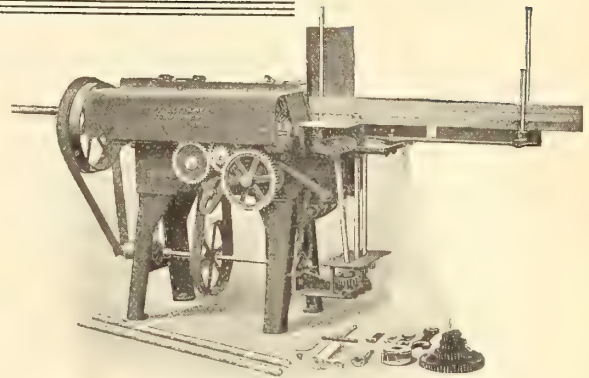
THE DEFIANCE MACHINE WORKS

DEFIANCE, OHIO

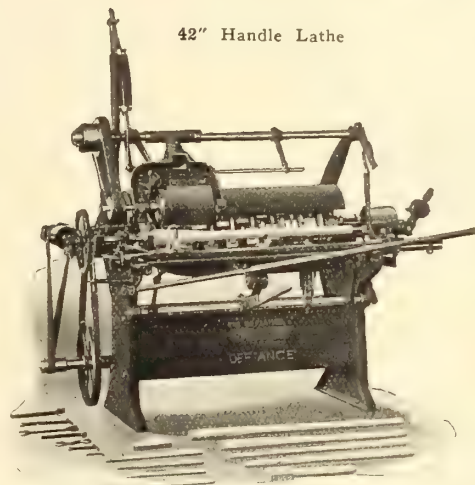
U. S. A.

NEW YORK

LONDON



Chaplin Handle Lathe



42" Handle Lathe

You Have Paid for an Installation of Chapman Double Ball Bearings

in Your Factory over and
over again, BUT—

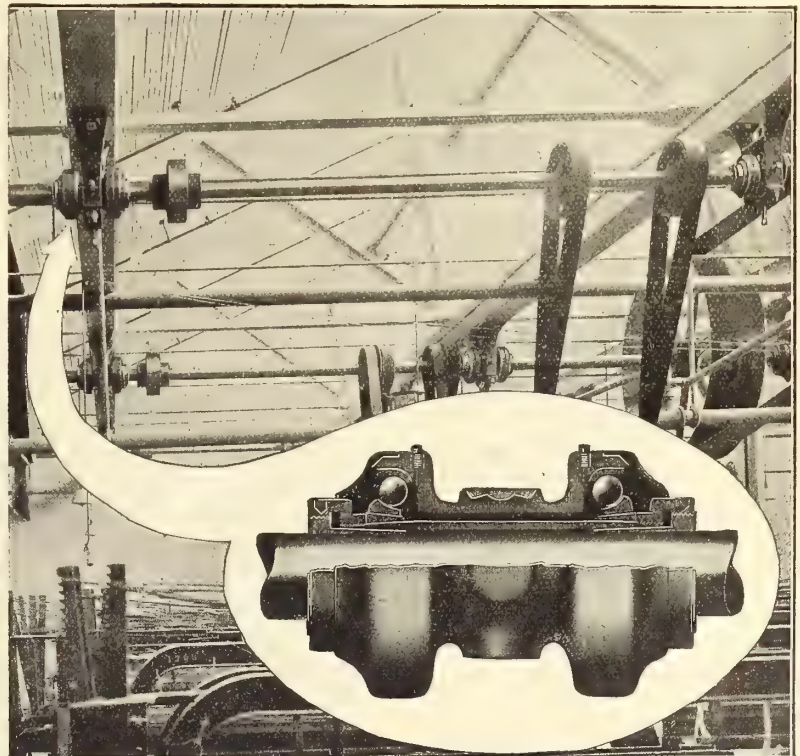
HAVE YOU GOT THEM?

Ordinary line shafting wastes 15 per cent. to 60 per cent. of power.

Line shafting equipped with Chapman Double Ball Bearings will eliminate about 75 per cent. of the friction, thus averaging a total saving of from 15 per cent. to 30 per cent.

Chapman Double Ball Bearings fit any adjustable hanger and require oiling and attention only once a year. No extra equipment required to install.

Write to-day for full particulars



The Chapman Double Ball Bearing Co. of Canada, Limited

Toronto

339-351 Sorauren Ave.

Ontario

American Branch: The Transmission Ball Bearing Co., Inc., 32 Wells St., Buffalo, N.Y.

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Surface Planer

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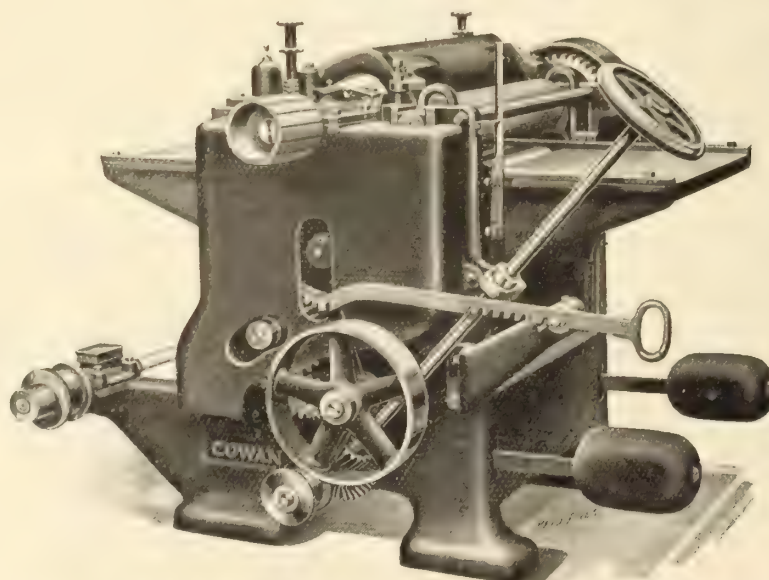
20", 24" and 26"

x 8"

Four rolls 4 1/2"

all driven.

The most con-
venient and sat-
isfactory Heavy
Pony Surfacers
made.



Woodworking Machinery

Planer and Matchers

Surfacers

Jointers

Moulders

Shapers

Tenoners

Mortisers

Borers

Relish, Mitre and
Dado Machines

Dowel Machines

Wood Lathes

Band Resaws

Band Saws

Circular Saws

Grinders

Sanders

Wiring Machines

Clamps

Veneer Presses

COWAN & COMPANY OF GALT LIMITED
GALT, ONTARIO

"Treat your machine
as a living friend"

SAVE

In Your Veneer Room

50% of Your Present Labor Cost

Four Men to do the Work of Eight!

Keen competition is ahead of you.

To compete **successfully** your equipment should include :

A "Black Bros." Veneer Taping Machine

Let us place one with you on trial and prove—*That it will cut your Labor Cost in two.*

This machine will tape together all kinds of Veneer, no matter whether it be thick or thin, handling both kinds equally well.

It will use the ordinary gum tape, or it will use plain paper tape and put on its own gum or glue just before it is laid.

Built in two sizes—24 in. and 36 in.

**Ask for prices and
particulars**

WE CONTROL THE CANADIAN PATENT
ON THIS MACHINE

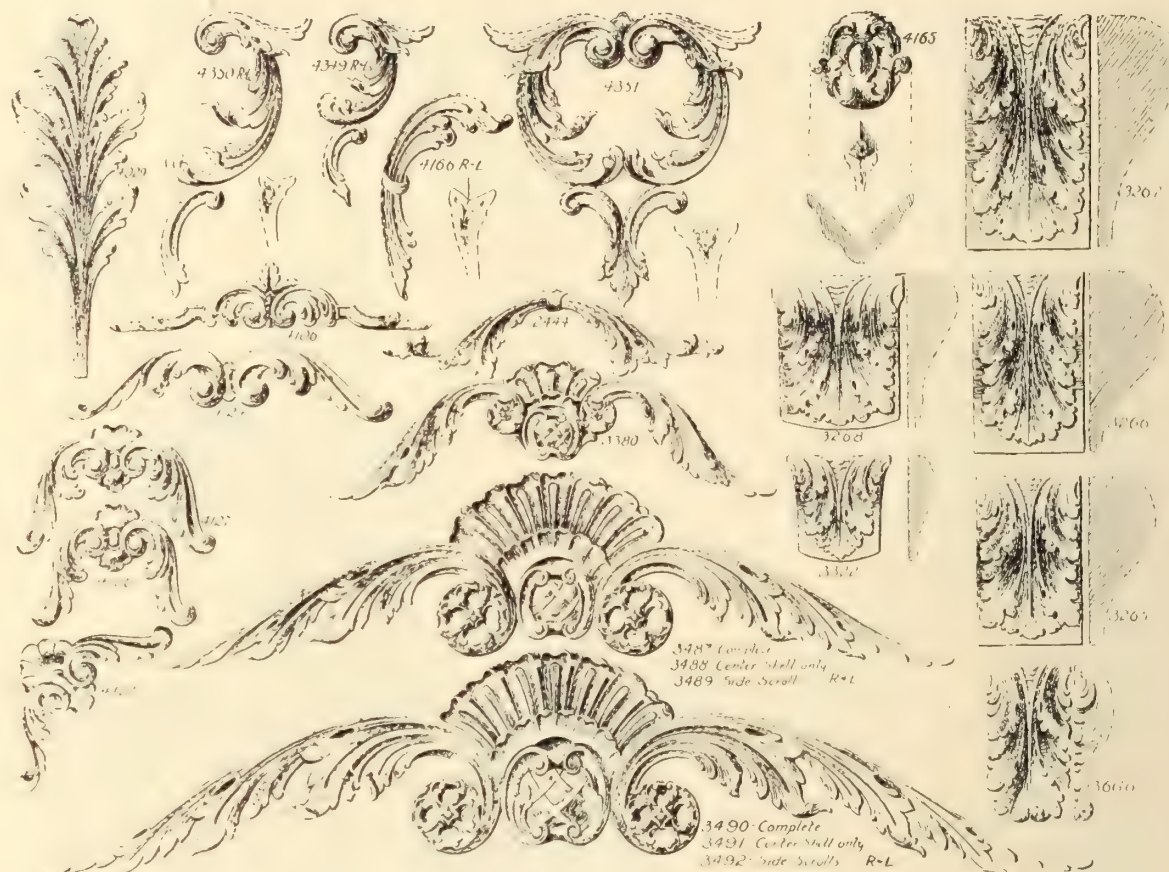


"Black Bros." Patented Veneer Taping Machine

The Preston Woodworking Machinery Co.

Preston, Ontario, Canada Limited

Period Carvings



Have you a copy of our New Catalogue? If Not, Why Not?

Woodfibre Ornaments or Compo

WE SOLICIT YOUR INQUIRIES

J. WALTER & SONS
KITCHENER - - - - - ONT.

IN 1881

GEORGE W. HARTZELL began converting walnut logs. Thus for thirty-seven years this institution has steadily progressed in its mastery of the problems involved in successful walnut manufacture.

Its notable growth is the result of profiting by experience—by the discovery and adoption of methods and equipment always in advance of current custom.

Hartzell's Choice Walnut is made by such methods from the best known growth of virgin trees—in a region which gave walnut its first claim to fame more than a generation ago.

OUR PRICE ON YOUR
ORDER WILL BE FAIR

Geo. W. Hartzell
Piqua, Ohio.

“Hartzell’s Choice Walnut”



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Ready for Immediate Shipment

GUM

20,770 ft. 1 x 13-17" Sap Gum Box.
11,441 ft. 1 x 9-12" and 13-17" Gum Box.
2,250 ft. 1" 1st and 2nds Red.
27,700 ft. 1" No. 2 Common Red.
4,000 ft. 5/4 No. 1 Com. & Selects Red.
7,610 ft. 6/4 1sts and 2nds Qtd. Red.
13,241 ft. 6/4 No. 1 Common Pl. Red.
3,606 ft. 6/4 No. 1 Com. & Sel's. Qtd Red.
41,000 ft. 1 x 13" and up 1sts & 2nds Sap.
137,947 ft. 1 in. No. 2 Com. Sap.
22,142 ft. 1" No. 3 Com. Sap.
2,500 ft. 5/4 1sts & 2nds Sap.
261,242 ft. 5/4 No. 1 Com. & Selects Sap.
144,049 ft. 5/4 No. 2 Com. Sap.
2,500 ft. 6/4 1sts and 2nds Sap.
33,047 ft. 6/4 No. 2 Com. Sap.
14,219 ft. 6/4 No. 3 Com.
8,000 ft. 5/4 No. 3 Com.

YELLOW CYPRESS

17,014 ft. 6/4 No. 2 Com. & Btr.
35,216 ft. 5/4 Shop.
96,492 ft. 5/4 No. 1 Common.
6,300" 6/4 No. 1 Common.
11,300 ft. 6/4 No. 2 Com.
49,478 ft. 8/4 No. 1 Com.
37,493 ft. 8/4 No. 2 Com.
11,019 ft. 10/4 Shop.
15,012 ft. 10/4 No. 1 Com.
4,516 ft. 10/4 No. 2 Com.

COTTONWOOD

7,550 ft. 1 x 6-12" 1sts and 2nds.
13,400 ft. 5/8 No. 1 Com. & Btr.

ARK. YELLOW PINE (Air Dried)

8,000 ft. 1 x 4-12" B & Better.
18,000 ft. 1 x 4" No. 1 and No. 2 Com.
17,000 ft. 1 x 6" No. 1 and No. 2 Com.
5,000 ft. 1 x 8" No. 1 and No. 2 Com.
15,000 ft. 1 x 12" No. 1 and No. 2 Com.
2,000 ft. 1 x 4-12" No. 1 & No. 2 Com.

RED OAK

11,124 ft. 1" No. 1 Com. & Selects
19,007 ft. 1" No. 2 Common.
166,149 ft. 1" No. 3 Common.
37,987 ft. 10/4 1st and 2nds.
42,096 ft. 10/4 No. 1 Com. and Selects.
8,752 ft. 3/4 No. 1 Com. Pl. White.
7,291 ft. 3/4 No. 2 Com. Pl. White.
50,000 ft. 3/4 No. 3 Com.
6,880 ft. 5/4 No. 1 Com. Qtd.
10,000 ft. 6/4 No. 1 Com. Pl.—30% FAS
70% White.
12,467 ft. 1" Sound Wormy Oak.
13,273 ft. scant. 1" No. 1 Com. & Btr.
Mixed Oak, largely 7/8 and 3/4".
12,192 ft. 1" 8' No. 2 Com. & Btr. Mixed Oak.

PECAN HICKORY

6,300 ft. 1" Log Run.
1,890 ft. 6/4 Log Run.
6,000 ft. 8/4 Log Run.
11,550 ft. 10/4 Log Run.

MISSISSIPPI ELM

37,116 ft. 6/4 Log Run.
39,142 ft. 6/4 No. 2 Com.
14,241 ft. 6/4 No. 3 Com.
46,992 ft. 8/4 Log Run.
14,414 ft. 12/4 Log Run.
1 Car 1" No. 2 and No. 3 Common.
1/2 Car 6/4 No. 2 and No. 3 Common.

QUARTER SAWN BLACK GUM

11,421 ft. 8/4 1st and 2nds.
19,140 ft. 8/4 No. 1 Com. and Selects.
13,291" 8/4 No. 2 Com.
12,146 ft. 1" Log Run—Plain.

8/4 DOG BOARDS—Small % 6/4

Cypress, 41,261 ft.
Elm, 7,440 ft.
Sap Gum, 11,420 ft.

ABERDEEN LUMBER COMPANY
PITTSBURGH, PA.



Quality—Our Slogan



STOCK LIST

Kind of Lumber	On Hand	Thickness	Grade	Width	Length	Kind of Lumber	On Hand	Thickness	Grade	Width	Length
Qtd. White Oak	18650	4 1/4"	F A S	10" up	Reg.	Sap Gum	8430	4 1/4"	Panel	18 & up	Reg.
	21660	4 1/4"	No. 1 Com.	Regular			71600	4 1/4"	Bx. Bds.	13-17"	
	22980	4 1/4"	No. 2 Com.				42505	4 1/4"	F A S	12" up	
	24000	4 1/4"	No. 1 Com.	Stps.			8250	4 1/4"	Bx Bds	9-12"	
	1554	5 1/4"	F A S				77270	4 1/4"	No. 2 Com.		
	4380	5 1/4"	No. 1 Com.			Plain Red Gum	110110	4 1/4"	No. 1 Com.	Regular	Reg.
	1425	5 1/4"	No. 2 Com.				5360	4 1/4"	No. 2 Com.		
Plain White Oak	34006	4 1/4"	No. 1 Com.	Regular	Reg.	S & R	477340	4 1/4"	L R		
	21,000	4 1/4"	J. Wormy				4420	5 1/4"	F A S		
	34515	4 1/4"	No. 3 Com.			S & R	119205	6 1/4"	L R		
Red and White	77900	4 1/4"	Log Run			Elm	16850	4 1/4"	L R		
Red and White	73297	5 1/4"	Log Run				18095	6 1/4"	L R		
	4290	6 1/4"	F A S				6350	8 1/4"	L R		
	3532	6 1/4"	No. 1 Com.				39125	10 1/4"	L R		
Red and White	7950	6 1/4"	L R				12417	10 1/4"	L R Rock		
	1600	8 1/4"	F A S				1950	10 1/4"	No. 1 Com.		
Red and White	43160	8 1/4"	L R				44440	12 1/4"	L R		
	2700	15 1/4"	Com. & Bet.				44310	12 1/4"	L R Rock		
Plain Red Oak	27836	5 1/4"	F A S				9915	12 1/4"	No. 3 Com.		
	27681	5 1/4"	No. 1 Com.			Cypress	211347	5 1/4"	Shop & Bet.		
	10250	5 1/4"	No. 2 Com.				51212	5 1/4"	No. 1 Com.		
	12755	6 1/4"	F A S				2775	6 1/4"	Shop & Bet.		
	2880	6 1/4"	No. 2 Com.				7747	6 1/4"	No. 1 & 2 Com.		
	8000	8 1/4"	F A S				16840	8 1/4"	Shop & Bet.		
	1440	12 1/4"	F A S				3475	10 1/4"	L R		
	6390	16 1/4"	Com. & Bet.				16575	12 1/4"	No. 1 Com. & Bet.		
Maple	2,220	4 1/4"	L R				7160	16 1/4"	No. 1 Com. & Bet.		
	4200	10 1/4"	L R								

Service that Satisfies

MEMPHIS BAND MILL CO., Memphis, Tenn.

SOUTHERN HARDWOODS Dry Lumber in Buffalo for Quick Shipment

BASSWOOD			
	Clear	No. 1	No. 2
1 & 2 Strips	Com.	Com.	Com.
1 in.	1,700	2,200	120,000
1 1/4 in.	144,300	12,000	146,500
1 1/2 in.	28,600	14,800	5,000
2 in.	16,200	40,000	4,500
2 1/2 in.	75,000	25,900	13,000
3 in.	550	12,500	3,900

BUTTERNUT			
	Clear	No. 1	No. 2
1 & 2 No. 1 Com.	No. 2 Com.		
1 in.	13,300	35,800	19,600
2 1/2 in.	3,700	3,000	

TENNESSEE SCENTED RED CEDAR			
	Clear	No. 1	No. 2
1 & 2 Com.	Com.		
1 in.	7,100	4,800	500
1 1/4 in.	4,400		

CHERRY			
	Clear	No. 1	No. 2
1 & 2 Strips	Com.	Com.	Com.
1 in.	154,000	24,000	129,200
1 1/4 in.	600	400	
1 1/2 in.	32,000	12,700	63,300
2 in.	4,100	14,200	10,900
2 1/2 in.	4,500	800	
3 in.	3,500	2,300	
4 in.	2,900	800	1,600

CHESTNUT			
	S. W. &	No. 1	No. 2
1 & 2 Strips	Com.	Com.	Com.
3/4 in.	1,500	62,000	
1 in.	193,900	7,700	26,300
1 1/4 in.	88,800	1,300	31,200
1 1/2 in.	22,500	1,000	61,200
2 in.	9,200	43,300	107,200
2 1/2 in.	1,700	250	
3 in.	16,000	300	

RED GUM			
	Clear	No. 1	No. 2
1 & 2 No. 1 Com.	No. 2 Com.		
1 in.	74,300	8,200	
1 1/4 in.	24,200	11,200	
1 1/2 in.	9,000	11,300	
2 in.	30,100	4,800	

HICKORY			
	Clear	No. 1	No. 2
1 & 2 No. 1 Com.	No. 2 Com.		
1 in.	1,200	1,300	600
1 1/4 in.	150	400	350
1 1/2 in.	5,000	9,300	2,000
2 in.	7,350	21,600	10,700
2 1/2 in.	7,000	5,000	
3 in.	5,580		
4 in.	100	200	

PLAIN RED OAK			
	Clear	No. 1	No. 2
1 & 2 Strips	Com.	Com.	Com.
3/4 in.	30,200		
1 in.	97,000	3,400	
1 1/4 in.	11,000		19,700
1 1/2 in.	256,200	2,700	7,500
2 in.	41,700	2,400	7,000
2 1/2 in.	68,900	4,300	8,200
3 in.	46,100		45,800
4 in.	18,100		600
	23,800		5,500
	6,600		4,900

PLAIN WHITE OAK			
	Clear	No. 1	No. 2
1 & 2 Strips	Com.	Com.	Com.
3/4 in.	23,400	11,900	
1 in.	11,300	800	
1 1/4 in.	11,150		
1 1/2 in.	31,900	5,000	9,000
2 in.	188,300	8,000	2,200
2 1/2 in.	65,300	10,000	6,000
3 in.	40,500	64,400	10,000
4 in.	29,000	91,000	
	138,800	35,500	

3 in.	46,800	39,800	4,400
4 in.	9,000	1,300	

QUARTERED RED OAK			
	Clear	No. 1	No. 2
1 & 2 Strips	Com.	Com.	Com.
1 in.	72,200	41,300	38,000
1 1/4 in.	500	3,900	
2 in.	1,000	7,400	

QUARTERED WHITE OAK			
	Clear	No. 1	No. 2
1 & 2 Strips	Com.	Com.	Com.
1/2 in.	84,500	25,400	118,600
3/4 in.			
1 in.	67,400	7,800	8,000
1 1/4 in.	1,000		300
1 1/2 in.	1,500		2,300
2 in.	6,500	350	5,100
2 1/2 in.	800		

POPLAR			
	1 & 2	Box	Bright
18 in. & up	1 & 2	Boards	Saps
1 in.	9,600		
1 1/4 in.	16,200	41,000	11,600
1 1/2 in.	2,800		15,000
2 in.	4,300	2,600	8,000
2 1/2 in.	15,600		13,000
3 in.	20,800		24,000
4 in.	5,900		32,600
	31,000		

Stained Saps			
	Clear	No. 1	No. 2
1 & 2 Strips	Com.	Com.	Com.
1 in.	23,600	28,300	59,300
1 1/4 in.	8,600	11,600	6,000
1 1/2 in.	7,700	31,000	20,700
2 in.	5,000	153,500	20,500
2 1/2 in.		9,300	
3 in.		40,000	32,000

Also Large Stock of ASH, BEECH, BIRCH and MAPLE

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto

MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y.

Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY

Red Gum Sap Gum Oak Tupelo

We carry a well assorted stock ready for immediate shipment of all Southern Hardwoods. Make a specialty of loading mixed cars of various grades and thicknesses for the factory trade. We issue a monthly stock sheet showing at a glance delivered prices on everything we have ready for shipment. If you are not receiving these lists, please write us.

P. J. Lawrence Lumber Co.

Sales Office

Syndicate Trust Bldg.

St. Louis, Mo., U.S.A.

J. V. Stimson & Co.

Manufacturers and Wholesalers Band Sawn

Hardwood Lumber and Dimension Stock

Band Mills and Yards

OWENSBORO, KY.

Permit us to figure on your needs in Plain and Quartered Red and White Oak, Ash, Poplar and Walnut.

Our "Specialty" is Quality

When Dry Lumber Gets Scarce

Remember !

Our dry-kiln is at your service—500,000 feet per month capacity and 10,000,000 feet of lumber from our own band-mills to draw upon.

James E. Stark & Co., Inc.
MEMPHIS, TENN.

Bone Dry

Right now dry lumber is scarce. Here's a list of dry stock ready for prompt shipment. Remember there's 30 years' experience back of every board.

- 1 car 5/8 FAS Plain Red Oak.
- 1 car 5/8 No. 1 Com. Plain Red Oak.
- 10 cars 4/4 No. 2 Com. and Btr. Plain Red Oak.
- 1 car 5/4 FAS Plain Red Oak.
- 1 car 5/4 No. 1 Com. Plain Red Oak.
- 2 cars 6/4 FAS Plain Red Oak.
- 2 cars 6/4 No. 1 Com. Plain Red Oak.
- 1 car 8/4 FAS Plain Red Oak.
- 1 car 8/4 No. 1 Com. Plain Red Oak.
- 3 cars 10/4 FAS Plain Red Oak.
- 1 car 10/4 No. 1 Com. Plain Red Oak.

*Write for our Complete List
with Prices*

North Vernon Lumber Co.
NORTH VERNON, IND.
LOUISVILLE, KY. DYERSBURG, TENN.
Every Board Branded "NVLCO." Quality Guaranteed

Special Dry Hardwood Birch Ash Basswood

Also

1" White Pine
1½" White Pine
2" White Pine
3" White Pine

Edward Clark & Sons, Ltd.

807-9 Bank of Hamilton Bldg., Toronto

"Gum of Quality" Yazoo River Red Gum

as produced by

**Thomas & Proetz Lumber
Company**

No. 3400 Hall St. St. Louis, Mo.

is carefully manufactured; soft
in texture; dark, rich in color;
and admirably suited for furni-
ture and interior trim.

Mills—Belzoni, Miss.; Catchings, Miss.
Naples, La.

If you are not buying from us, write today.

Perfection in Quality and Service

Service that is prompt and accurate is a big factor in our dealings and at the same time the acme of quality always prevails. We make a specialty of supplying Sap, Red Gum, Crating and Southern Hardwoods. Let us know your requirements in factory stock including all grades and thicknesses of Cypress, Sap, Red Tupelo and Black Gum, Cottonwood, Oak, Elm, Sycamore and Ash. We can ship immediately on receipt of your order.

Cornelius Lumber Company
ST. LOUIS, Mo., U. S. A.

ATTENTION: "Auto Body and Furn. Manfgs."

We are one of the few firms
in the country handling

White Ash Exclusively

We sort it to meet all requirements. **Tough** texture and **Medium** texture. Can furnish **Special Widths** and **Lengths** one to four inches thick. Write or wire when needing **WHITE ASH**.

THOMPSON, KATZ LUMBER CO.
Memphis, Tenn.
Cable Address "TomKatz"

I O W A BLACK WALNUT

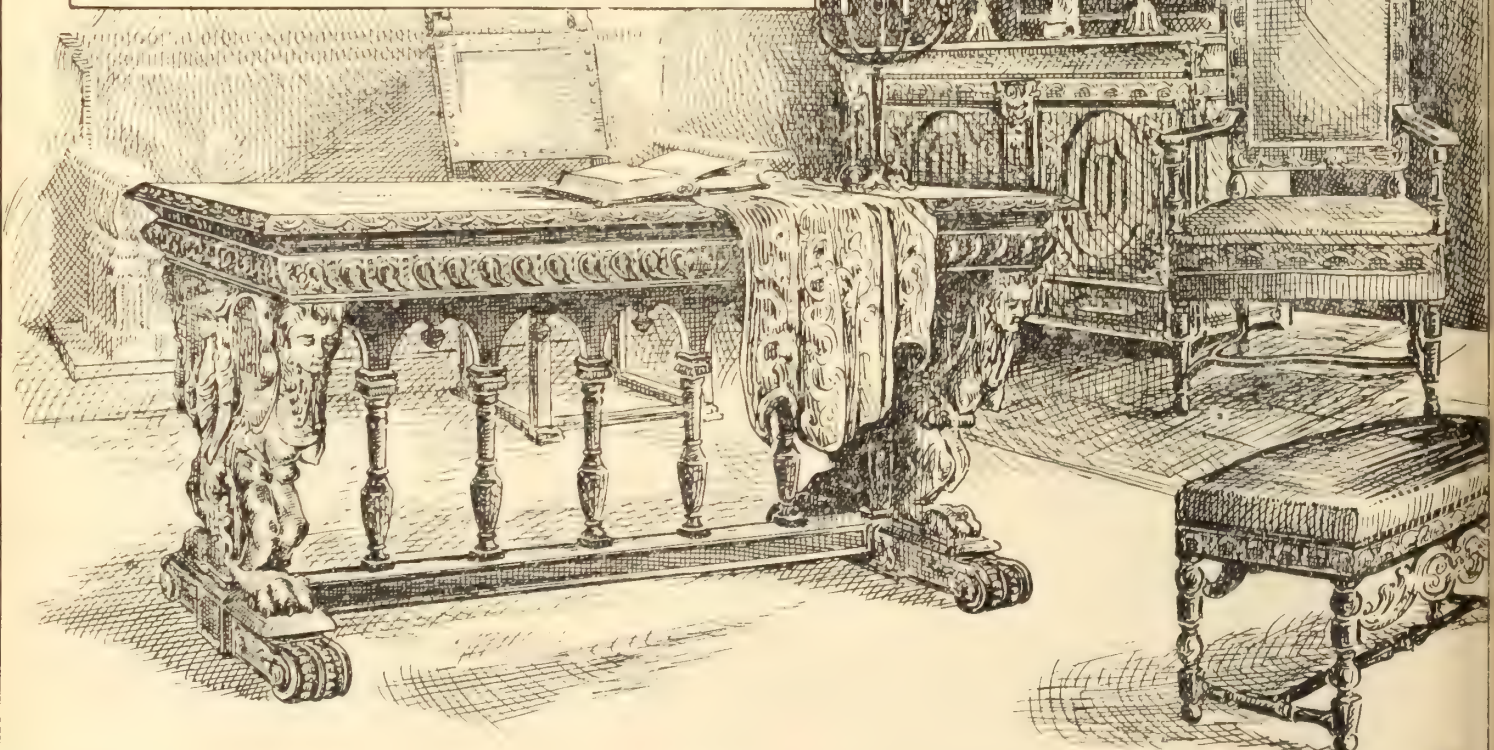
NO cabinet wood responds as fully to the art of the furniture designer or the skill of the workman, as American Black Walnut. It meets every requirement.

Furniture of Walnut possesses a lasting charm and beauty that age does not destroy and the liberal use of this wood in furniture factories, guarantees the quality of their product.

Our customers assure us IOWA WALNUT is superior to all other varieties for its texture, grain and beautiful coloring. We can prove this by our first shipment.

Send us your list of Walnut requirements in lumber and Veneers.

Des Moines Sawmill Co.
DES MOINES, IOWA.



WHY WALNUT?

Because it is Beautiful

The natural rich brown color of Walnut is inherent in the wood—it is not artificial, therefore age only enhances its beauty. The color of Walnut is warm and living and its appreciation grows with constant contact. Besides its attractive color, Walnut has an abiding figure, subdued but elegant, endless in its variation, but uniformly pleasing in its artistic effects.

Because it is Steadfast

Walnut in its physical or mechanical characteristics is the finest known cabinet wood. It is strong and durable. It does not shrink, warp, crack or check. It has a fine even texture. For such exacting service as in gunstocks or airplane propellers it has received the approval of the modern world. Its use for furniture in past ages has preserved for us the handiwork of master woodworkers and given high value to these antiques.

Because it is Still Available

Walnut is not an abundant wood like pine, but there is plenty for the high purposes for which it is by nature so pre-eminently fitted—and it costs little if any more than some of the inferior substitute woods.

What More Could You Ask?

Write

American Walnut Manufacturers' Association
115 Broadway, New York

Two Conclusive Proofs Why You Should Buy Your Lumber From Us



Examine closely the picture above, then read the following letter we received a few days ago from one of the largest manufacturers of Mouldings in the world. (Lumber for Mouldings must be absolutely flat and straight.)

"We have been using exclusively gum lumber, both sap and red, shipped by you for the last three years, and have been well pleased with its character, both as to grade and condition. The condition of same being an evidence of careful handling before shipping. We have been well pleased with the transactions which we have had with you, and will endeavor to continue using your stock as long as available."

We also manufacture Oak, Ash, Elm, and Cypress at Louise, Miss., mills. Get our prices before placing your orders and become a SATISFIED user of Gum or one of the other Southern hardwoods.

BARR-HOLADAY LUMBER CO.

GREENFIELD - OHIO

HERE AGAIN

is the proof that we are not only PULLING FOR GOOD OLD

OAK

but also pulling for those who SELL IT—

THIS MEANS YOU.

Month by month we shall prove to the CONSUMER (Your Customer) that OAK FURNITURE—is due for a very heavy "COME-BACK."

Does your line meet the issue? If not, it can by next season.

AMERICAN OAK MFRS.' ASSN.,

LET US CONSULT TOGETHER FOR THE GOOD OF ALL CONCERNED. WRITE US. WE'LL ANSWER.

Room 1408 14 MAIN STREET, MEMPHIS, TENNESSEE



ANOTHER OAK FURNITURE ADV. APPEARING IN THE BEST MAGAZINES IN AMERICA.

"Good OAK FURNITURE is more nearly 'boy-proof' than any other equally fine cabinet wood."

Its elegance, dignity and artistic adaptability are backed by its sturdy resistance to dents and scratches. (Really a quite important point.)

"There is no finer heirloom than good OAK furniture." There is no more safe and enduring investment—none better worth insisting upon.

Indiana

Quartered Red and White

OAK

1,000,000 feet of dry stock carried
at all times

ALSO PLAIN OAK AND ASH

We manufacture all stock carried

Evansville Band Mill Co.

FRANK M. CUTSINGER, Pres.
GEO. H. FOOTE, Vice-Pres. & Treas.
JOSEPH WALTMAN, Secretary

Mills at EVANSVILLE, Indiana

John I. Shafer Hardwood Co.

Farmers Trust Building
SOUTH BEND, IND., U.S.A.

Below is a partial inventory of the Dry
Furniture Stock which we have ready
for immediate shipment, mostly from
Indiana and Ohio.

BASSWOOD

3" FAS & No. 1 Com. 11,080'

SOFT ELM

5/8" Log Run 18,700'

1 1/2" FAS & No. 1 Com. 15,700'

2" FAS & No. 1 Com. 43,100'

2 1/2" FAS & No. 1 Com. 77,473'

3" FAS & No. 1 Com. 73,248'

PLAIN OAK

1" FAS & No. 1 Com. 38,568'

1 1/2" FAS & No. 1 Com. 18,275'

2" FAS & No. 1 Com. 228,482'

2 1/2" FAS & No. 1 Com. 94,273'

3" FAS & No. 1 Com. 162,560'

4" FAS & No. 1 Com. 64,820'

HACKBERRY

2" FAS & No. 1 Com. 16,930'

POPLAR

1" FAS No. 1 & 2 Com. 32,869'

2" FAS No. 1 & 2 Com. 27,204'

2 1/2" FAS No. 1 & 2 Com. 2,148'

HARD MAPLE

1" FAS & No. 1 Com. 20,820'

1 1/2" FAS & No. 1 Com. 10,800'

2" FAS & No. 1 Com. 27,038'

2" FAS & No. 1 Com. 176,691'

3" FAS & No. 1 Com. 15,663'

WALNUT

3/4" No. 1 Common 35,000'

1" No. 1 & No. 2 Com. 75,000'

SOFT MAPLE

2" Log Run 14,200'

2 1/2" Log Run 13,760'

Our motto, "Every Customer a Booster".

We Operate 4 Band Mills

and carry large stocks of

Quartered White Oak

Quartered Red Oak

Plain White Oak

Plain Red Oak

Ash

Poplar

Hickory

Walnut

Gum

Elm

Maple, etc.

Crating and Dimension Stock a Specialty

Can furnish you highly satisfactory
stock at right prices—TRY US.

MALEY & WERTZ

EVANSVILLE, INDIANA

HUNT, WASHINGTON & SMITH

Nashville,

Tennessee

Manufacturers of

Quartered and Plain White Oak

Poplar - Ash - Chestnut

Tennessee Red Cedar

Gum and Cypress

Canadian Representative

W. R. YOUMANS

1050 College St.

Toronto, Ontario

Dry Spruce and Birch

Good Stocks, Prompt Shipments, Satisfaction

C. A. SPENCER, Limited

Wholesale Dealers in Rough and Dressed Lumber

Offices - 500 McGill Building
MONTREAL - - - Quebec

POPLAR GUM BIRCH

For prompt shipment we carry in stock large quantities of Rotary Cut, Sliced and Sawed Veneers and Southern Hardwood Lumber.

Send us your inquiries—our prices and service will insure future business.

Christmann Veneer & Lumber Co.

3750 N. Second St., St. Louis, Mo.

MAHOGANY WALNUT OAK

F. T. DOOLEY, President.

T. E. JONES, Secy.-Treas.

F. T. Dooley Lumber Co.
Inc.

MANUFACTURERS and WHOLESALERS
of

SOUTHERN HARDWOODS

Plain and Quartered Oak
Cypress, Gum, Ash
Soft Maple and Elm

Send us your inquiries

Memphis :: :: Tennessee

Hardwoods

We can furnish you immediately Factory Stock including all grades and thicknesses of

Walnut, Chestnut
Mahogany, Teak, Oak
Ash, Cypress

ALSO

VENEERS

Oak, Maple, Walnut and
other Fancy Woods

The McLennan Lumber Co.

Limited

MONTREAL

American Hardwood Lumber Co.

St. Louis, Mo.

Large stock of—

**Dry Ash, Quartered Oak
Plain Oak and Gum**

Shipments from — NASHVILLE, Tenn.,
NEW ORLEANS, La., and BENTON, Ark.

Palmer & Parker Co.

103 Medford St., Charlestown District

BOSTON, MASS.

MANUFACTURERS OF

African, Mexican and Cuban

MAHOGANY

VENEERS and
Built-up Panels

TEAK and other
Foreign Woods



Band Mill and Yards, Memphis Plant

STOCK LIST

All Stock Listed is Thoroughly Dry and Ready for Immediate Shipment

PLAIN RED OAK

75M' 6/4 1s and 2s
50M' 8/4 1s and 2s
12M 10/4 Com. and Bet.
110M 11/4 Com. and Bet.
117M 12/4 Com. and Bet.
25M 15/4 Com. and Bet.
40M 5/4 No. 1 Com.
60M 8/4 No. 1 Com.
14M 5/4 No. 2 Com.
75M 6/4 No. 2 Com.

CEDAR

6M' 4/4

ASH

7M' 5/4 1s and 2s
10M 8/4 No. 1 Com.
1M 10/4 No. 1 Com.
10M 4/4 No. 2 Com.
55M 6/4 No. 2 Com.

CYPRESS

4M 4/4 Common

COTTONWOOD

4M 4/4 Common
3M 9-12" Box Boards
2M 13-17" Box Boards

QRT'D RED OAK

1M' 6/4 1s and 2s
2M 4/4 No. 1 Com.

QRT'D WHITE OAK

3M' 4/4 10" and up
5M 6/4 1s and 2s
16M 8/4 1s and 2s
2M 3/4 Com. and Bet.
25M 6/4 No. 1 Com.
1M 10/4 No. 1 Com.
8M 6/4 No. 2 Com.
2M 8/4 No. 2 Com.

C. & B. PLAIN RED GUM

25M 5/4 1s and 2s
150M 6/4

C. & B. QRT'D RED GUM

120M 6/4 Com. and Bet.
17M 8/4 1s and 2s

LOG RUN ELM

20M' 6/4
10M 10/4
8M 12/4
10M 5/4-6/4 No. 3 Com.
28M 6/4-8/4 No. 2 Com.

4/4 LOG RUN WALNUT

5M' (No. 1 Com.
(No. 2 Com.

GUM BOX BOARDS

175M' 13-17"
20M 9-12

PLAIN WHITE OAK

2M' 3/4 Com. and Bet.
2M 10/4 Com. and Bet.
38M 11/4 Com. and Bet.
1M 12/4 Com. and Bet.
7M 15/4 Com. and Bet.
140M 8/4 No. 1 Com.
18M 10-12/4 No. 1 Com.
4M 4/4 No. 2 Com.
2M 6/4 No. 2 Com.
120M 4/4-6/4 No. 3

PLAIN SAP GUM

245M' 5/4 No. 1 Com.
240M 4/4 No. 2 Com.
60M 5/4 No. 2 Com.
185M 6/4 No. 2 Com.
30M 8/4 No. 2 Com.
15M 5/4 No. 3 Com.
7M 12/4 No. 3 Com.

QTD. SAP GUM

14M' 10/3 No. 2 Com.
9M 12/4 No. 2 Com.
100M 8/4 Com. and Bet.

HICKORY

15M' 6/4 No. 3 Com.
1M 10/4 No. 3 Com.

TUPELO

7M' 4/4 1s and 2s
5M 6/4 1s and 2s
4M 4/4 Common

Wire your order at our expense

"DIRECT FROM PRODUCER TO CONSUMER"

GAYOSO LUMBER COMPANY

MEMPHIS, TENNESSEE

GEO. C. BROWN & COMPANY

Band Mill, Proctor, Ark.

Main Office, Memphis, Tenn.

Canadian Representative: M. E. Cummings, 814 Richmond Ave., Buffalo, N. Y.

St. Francis Basin Hardwoods

DRY STOCKS AVAILABLE FOR QUICK SHIPMENT

Tennessee Aromatic Red Cedar

DELIVERED PRICES AND DESCRIPTIONS CHEERFULLY FURNISHED

Oak Timbers Cut to Order

SAP GUM

	Feet
4/4" 1st and 2nd, 18" and up ...	15,000
4/4 Box Boards, 13-17" ...	150,000
4/4 Box Boards, 7-12" ...	150,000
4/4 1st and 2nd, 13-17" ...	70,000
4/4 No. 2 and 3 Common ...	250,000
5/4 No. 1 Common ...	35,000
5/4 No. 2 and 3 Common ...	11,000
8/4 No. 2 and 3 Common ...	5,000

SELECTED RED GUM, PLAIN

	Feet
4/4" 1st and 2nd ...	250,000
4/4 No. 1 Common ...	300,000
5/4 1st and 2nd ...	15,000
5/4 No. 1 Common ...	15,000
6/4 1st and 2nd ...	50,000
6/4 No. 1 Common ...	200,000

SELECTED RED GUM QUARTERED

	Feet
4/4" 1st and 2nd ...	150,000
4/4 No. 1 Common ...	150,000
6/4 No. 1 Common ...	30,000
8/4 No. 1 Common ...	35,000
10/4 1st and 2nd ...	3,000
10/4 No. 1 Common ...	2,000
12/4 1st and 2nd ...	14,000
12/4 No. 1 Common ...	8,000

SELECTED RED GUM—(Figured Wood)

	Feet
4/4" 1st and 2nd Plain ...	40,000
5/4 1st and 2nd Plain ...	2,000
4/4 1st and 2nd Quartered ...	13,000
5/4 1st and 2nd Quartered ...	200
6/4 1st and 2nd Quartered ...	600
10/4 1st and 2nd Quartered ...	9,000
12/4 1st and 2nd Quartered ...	2,500

PLAIN RED OAK

	Feet
4/4" No. 1 Common and Selects ...	40,000
4/4 No. 2 Common ...	12,000
5/4 No. 1 Common and Selects ...	6,000
5/4 No. 2 Common ...	9,000
6/4 1st and 2nd ...	3,000
6/4 No. 1 Common and Selects ...	30,000
6/4 No. 2 Common ...	15,000

QUARTER SAWED RED OAK

	Feet
3/4" No. 1 Common and Better ...	3,000
4/4 No. 2 Common ...	300
6/4 No. 1 Common and Better ...	1,200
6/4 No. 2 Common ...	3,500

PLAIN WHITE OAK

	Feet
4/4" 1st and 2nd ...	18,000
4/4 No. 1 Common and Selects ...	100,000
4/4 No. 2 Common ...	15,000
5/4 1st and 2nd ...	500
5/4 No. 1 Common and Selects ...	1,500
6/4 1st and 2nd ...	13,000
6/4 No. 1 Common and Selects ...	35,000
6/4 No. 2 Common ...	50,000
10/4 No. 1 Common and Better ...	3,500

QUARTER SAWED WHITE OAK

	Feet
4/4" No. 1 Common and Selects ...	3,000
4/4 No. 2 Common ...	3,000
5/4 No. 1 Common and Better ...	2,000
4/4 No. 2 and Better Strips ...	3,000

MIXED OAK

	Feet
4/4" No. 2 S. W. ...	7,500
4/4 No. 3 Common ...	100,000
5/4 No. 3 Common ...	6,000

ELM

	Feet
4/4" Log Run ...	75,000
4/4 No. 2 Common ...	10,000
4/4 No. 3 Common ...	5,000
6/4 Log Run ...	30,000
8/4 Log Run ...	40,000
8/4 No. 2 Common ...	15,000
8/4 No. 3 Common ...	1,500
12/4 Log Run ...	35,000

SOFT MAPLE

	Feet
5/4" Log Run ...	4,000
6/4 Log Run ...	10,000
8/4 No. 3 Common ...	4,000
16/4 Log Run ...	37,000

MISCELLANEOUS HARDWOODS

	Feet
8/4" L. R. Sycamore ...	20,000
5/4 No. 3 Common Ash ...	7,000
6/4 No. 3 Common Ash ...	45,000
4/4 L. R. Cottonwood ...	2,000
6/4 L. R. Pecan ...	12,000
6/4 No. 3 Common Pecan ...	25,000
8/4 L. R. Pecan ...	30,000
10/4 L. R. Pecan ...	9,000
4/4 L. R. Black Gum, Plain ...	18,000

Tennessee Aromatic Red Cedar in straight carlots or mixed with hardwoods.

Prompt, courteous and efficient service at all times—Try us.

Guaranteed Delivery has Been our Best Asset

Following is dry, band sawn stock, of our own manufacture. May we serve you ?

ASH
15,000' 4/4 No. 1 Common
15,000' 4/4 No. 2 Common
8,000' 5/4 S. W.
8,000' 6/4 No. 2 Common
8,000' 8/4 No. 2 Common
20,000' 10/4 No. 2 Common
8,000' 12/4 No. 2 Common

COTTONWOOD
15,000' 4/4 6 to 12
15,000' 4/4 13 & up
75,000' 4/4 No. 1 Common
75,000' 4/4 No. 2 Common
8,000' 4/4 N. B. Bds.
8,000' 4/4 W. B. Bds.

ELM.
3,000' 5/4 No. 2 Common
9,000' 4/4 No. 2 Com. & B.
80,000' 8/4 No. 2 Com. & B.
90,000' 10/4 No. 2 Com. & B.
90,000' 12/4 No. 2 Com. & B.
30,000' 16/4 No. 2 Com. & B.
30,000' 12/4 No. 2 Com.

TUPELO & BLACK GUM
50,000' 4/4 FAS
50,000' 4/4 No. 1 Common
50,000' 4/4 No. 2 Common
9,000' 4/4 W. B. Bds.

PLAIN RED GUM
50,000' 4/4 No. 1 Com.
4,000' 5/4 FAS
40,000' 5/4 No. 1 Com.

QUARTERED RED GUM
15,000' 4/4 FAS
5,000' 5/4 FAS
90,000' 5/4 No. 1 Com.

QUARTERED RED GUM
90,000' 6/4 No. 1 Com.
25,000' 1-7/16 No. 1 Common
15,000' 8/4 FAS
50,000' 8/4 No. 1 Common
15,000' 10/4 FAS
30,000' 10/4 No. 1 Com.
30,000' 12/4 FAS
30,000' 12/4 No. 1 Common.

QUARTERED RED OAK
16,000' 5/4 No. 1 Common
3,000' 5/4 No. 2 Com.
5,000' 8/4 FAS
20,000' 8/4 No. 1 Common
12,000' 8/4 No. 2 Common

PLAIN SAP GUM
4,000' 5/8 FAS
15,000' 5/8 No. 1 Com.
30,000' 5/8 No. 2 Common
3,000' 3/4 FAS
40,000' 3/4 No. 1 Com.
40,000' 3/4 No. 2 Com.
15,000' 4/4 FAS
15,000' 4/4 1/3 and up
90,000' 4/4 No. 1 Common
90,000' 4/4 No. 2 Common
5,000' 5/4 FAS
75,000' 5/4 No. 1 Common
30,000' 5/4 No. 2 Common
5,000' 6/4 FAS
8,000' 8/4 No. 1 Common
15,000' 6/4 No. 2 Common
80,000' 8/4 No. 1 Com.
75,000' 8/4 No. 2 Common
30,000' 10/ No. 2 Common
15,000' 12/4 No. 2 Common

QUARTERED RED GUM
Sap No Defect
13,000' 5/4 No. 1 Common
40,000' 8/4 No. 1 Common

PLAIN RED OAK
7,000' 5/8 No. 1 Com.
8,000' 5/8 No. 2 Com
12,000' 5/4 FAS
50,000' 5/4 No. 1 Common
20,000' 5/4 No. 2 Common
40,000' 6/4 No. 1 Common
15,000' 6/4 No. 2 Common
60,000' 8/4 FAS
90,000' 8/4 No. 1 Common
10,000' 8/4 No. 2 Common
18,000' 10/4 No. 1 Common
30,000' 10/4 No. 2 Common
12,000' 12/4 No. 1 Common.
2,000' 12/4 No. 2 Common

WALNUT
5,000' 4/4 No. 2 Common
6,000' 6/4 No. 2 Common
5,000' 8/4 No. 1 Common

QUARTERED WHITE OAK
15,000' 3/4 FAS
17,000' 3/4 No. 1 Common
3,000' 3/4 No. 2 Common
50,000' 4/4 No. 1 Common
12,000' 4/4 No. 2 Com.
15,000' 5/4 FAS
30,000' 5/4 No. 1 Common
4,000' 6/4 FAS
3,000' 8/4 FAS
60,000' 8/4 No. 1 Common
60,000' 8/4 No. 2 Common

PLAIN WHITE OAK
7,000' 5/8 No. 2 Common
9,000' 4/4 FAS
22,000' 4/4 No. 1 Common
32,000' 6/4 No. 1 Common
3,000' 6/4 No. 2 Common
15,000' 8/4 FAS
50,000' 8/4 No. 1 Common
50,000' 8/4 No. 2 Common
40,000' 10/4 No. 1 Common
40,000' 10/4 No. 2 Common
60,000' 12/4 No. 1 Common
14,000' 12/4 No. 2 Common

SOUND WORMY OAK
3,000' 3/4
30,000' 4/4
30,000' 5/4
90,000' 8/4

POPLAR
2,000' 4/4 W. B. Bds.
1,000' 4/4 FAS, Sap
2,000' 4/4 No. 1 Common
2,000' 8/4 FAS, Sap
25,000' 8/4 No. 1 Common
25,000' 8/4 No. 2 Common

SYCAMORE
8/4 Log Run
58,000' 12/4 Log Run

MAPLE
40,000' 12/4 Log Run

HACKBERRY
6,000' 5/4 Log Run
1,000' 8/4 Log Run

MAY BROTHERS

MILLS and OFFICE

Canadian Representative: C. BEUMER, Guelph, Ont.

MEMPHIS, TENNESSEE

Stock of Black Walnut Lumber

Ready for Prompt Shipment

June 1, 1919

Thickness	1sts & 2nds 6-10"	1sts & 2nds 10-14"	1sts & 2nds 14" and up	1sts & 2nds 6-7 ft.	1sts & 2nds 4-5½ ft.	No. 1 Selects	No. 1 Common	No. 2 Common	Clear Strips	Clear Face
1/2 inch	70450	.....	.....	2100	.....	2100	63200	44200	.....	.....
5/8 inch	21760	.....	.....	2700	.....	3620	75700	78900	.....	.....
3/4 inch	45250	5200	.....	1500	1050	3300	48800	39600	.....	.....
4/4 inch	119900	.....	2500	7200	6000	149900	315700	618600	.....	.....
5/4 inch	24600	7200	1000	1200	1200	7100	37200	51200	1000	.....
6/4 inch	12100	4000	800	500	200	3800	113300	87700	600	.....
8/4 inch	13100	7400	900	250	100	5800	36700	104600	1200	.....
10/4 inch	11800	.....	.....	500	300	4400	159400	20100	.....	.....
12/4 inch	6900	.....	.....	.....	.....	.....	27400	3600	.....	.....
16/4 inch	5800	.....	.....	.....	.....	.....	6300	1300	.....	.....

We can also furnish Mexican Mahogany, White Ash, Yellow Poplar,
Cherry and Plain and Quartered White Oak

The Kosse, Shoe & Schleyer Company

Eastern Branch
Baltimore, Md.

Main Office and Band Mill
Cincinnati, O.

I have the following stock for immediate shipment

- 1 Car 2 in. and 3 in. Hard Maple.
- 1 " 2 in. and 3 in. Soft Elm.
- 1 " 2 in. Canadian White Oak.
- 1 " 1 in. and 2 in. White Ash.
- 1 " 1¼ in. Basswood.
- 1 " 1 in. Basswood.
- 1 " 2 in. Canadian Chestnut.
- 3 " 1 in. Spruce Crating.
- 5 " 5/8 in. Spruce Crating.

Besides the above stock I can supply anything in Oak, Gum, Chestnut and White Oak from ¼ in. to 4 in. West Virginia stock either plain or quarter sawn. Try a car of my West Virginia Plain White Oak and Chestnut.

Excelsior and Wood Wool always on hand in Kitchener.

Write, Wire or Phone Your Inquiries

PERCY E. HEENEY

202 Weber Chambers, KITCHENER, ONT.

BLACK WALNUT

Large Stock ready for immediate shipment, also Well Assorted Stocks at our Yards and Mills

in West Virginia and Kentucky

OAK

**Maple, Hickory, Chestnut
Basswood and Poplar**

Prices and stock list on request

Burns & Knapp
Lumber Company
CONNEAUTVILLE, PA.

Dry Stock on Hand at our West Virginia, Kentucky, Tennessee and Mississippi Band Mills

QUARTERED WHITE OAK

- 30 M ft. 4/4 1s and 2s.
- 40 M ft. 4/4 No. 1 Com.
- 60 M ft. 4/4 No. 2 Com.
- 33 M ft. 5/4 1s and 2s.
- 26 M ft. 5/4 No. 1 Com.
- 10 M ft. 6/4 1s and 2s.
- 60 M ft. 6/4 No. 1 Com.
- 140 M ft. 4/4 2½ to 5½ Strips.

PLAIN WHITE OAK

- 120 M ft. 4/4 1s and 2s.
- 68 M ft. 4/4 No. 1 Com.
- 80 M ft. 4/4 No. 2 Com.
- 60 M ft. 5/4 1s and 2s.
- 70 M ft. 5/4 No. 1 Com.
- 33 M ft. 6/4 1s and 2s.
- 72 M ft. 6/4 No. 1 Com.
- 80 M ft. 8/4 1s and 2s.
- 43 M ft. 8/4 No. 1 Com.
- 120 M ft. 10/4 Com. and Better.
- 50 M ft. 10/4 Wormy.
- 140 M ft. 12/4 Com. and Better.

PLAIN RED OAK

- 68 M ft. 4/4 1s and 2s.
 - 26 M ft. 4/4 No. 1 Com.
 - 70 M ft. 5/4 1s and 2s.
 - 80 M ft. 5/4 No. 1 Com.
 - 20 M ft. 8/4 1s and 2s.
 - 30 M ft. 8/4 No. 1 Com.
- All the above exceptionally fine soft textured stock, good widths and lengths. Can cut Special Oak Bills.

POPLAR

- 38 M ft. 4/4 1s and 2s.
- 40 M ft. 4/4 Saps.
- 20 M ft. 4/4 Selects.
- 59 M ft. 4/4 No. 1 Common.
- 80 M ft. 4/4 No. 2 Common A
- 60 M ft. 4/4 No. 2 Common B
- 140 M ft. 5/4 All grades now sorting.
- 200 M ft. 6/4 All grades now sorting.
- 108 M ft. 8/4 All grades now sorting.

- 20 M ft. 10/4 Common and Better.
 - 30 M ft. 12/4 Common and Better.
 - 10 M ft. 16/4 Common and Better.
- All the old-fashioned virgin soft textured mountain stock.

ASH

- 120 M ft. 4/4 Log Run.
 - 90 M ft. 6/4 Log Run.
 - 40 M ft. 8/4 Common and Better.
 - 20 M ft. 8/4 No. 2 Common.
 - 50 M ft. 10/4 Common and Better.
 - 80 M ft. 12/4 Common and Better.
 - 20 M ft. 16/4 Common and Better.
- All good tough stock. Will sell on grade.

RED AND SAP GUM

Two Million Feet, all grades and thicknesses, both Plain and Quartered, at our Mississippi Mills, DRY.

Write for our attractive delivered prices on any of the above; also a full description of our stock.

The W. E. Heyser Lumber Company

Main Office, 1509-13 Union Trust Bldg., CINCINNATI, OHIO

Hardwood Dowels

Plain, Straight and Spiral Grooved



"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co. Limited

ORILLIA ONTARIO
Sawmills at Zebra and Orillia, Ont.
Cable Address: "Special," Orillia, Can.

Holly Ridge Lumber Co.

Incorporated

MAIN OFFICE
LOUISVILLE, KY.

This Company markets only the products of its own Band Mills located at

HOLLY RIDGE, LA.
MONROE, LA.
MEEKER, LA.
ST. LANDRY, LA.

These mills are sawing logs removed from the lands of this Company, owned by it in fee simple.

It is our policy to make high grades and to ship our customers exactly what they buy, and in no instance do we mix the grade.

These mills are producing Gum, Ash, Elm, Oak and Cypress.

A consumer placing business in the hands of this Company is assured of having direct shipments from the producer to the consumer, and that the business will be conducted on a high plane in every respect.

BRANCH OFFICES

KANSAS CITY, MO.
Geo. H. Temple, Mgr. 204 R. A. Long Bldg.

GRAND RAPIDS, MICH.
Howard A. Shead, Mgr., 601 Grand Rapids Bank Bldg.

J. H. Bonner & Sons

Memphis, Tenn.

Mills:
Jonquil and Ruffwood, Ark.

Manufacturers

Band Sawn Hardwood Lumber

Write or wire for prices on
Gum, Oak, Elm, Etc.

Southern Hardwoods

Our mills now producing high grade stock, well manufactured, including:

Poplar, Chestnut, Basswood
Buckeye, Hickory, Red and
Sap Gum, Plain and Quartered Red and White Oak.

Agricultural and other special purpose stock, Oak Planking, Railway Material, Heavy Timbers, in fact almost anything in the line of Hardwood Lumber.

Buskirk-Rutledge Lumber Co.
Cincinnati, Ohio.

OAK

Plain and Quartered
Uniform Color—Soft Texture

Poplar, Ash and other Hardwoods

We have 35,000,000 feet dry stock—all of our own manufacture, from our own timber grown in Eastern Kentucky.

Prompt Shipments

The **Mowbray & Robinson Co.**
(INCORPORATED)

Manufacturers

Office: CINCINNATI, OHIO

MILLS

Quicksand, Ky.; Viper, Ky.; West Irvine, Ky.

Canadian Representative :

M. E. CUMMINGS, 814 Richmond Ave., Buffalo N. Y.

The Hyde Lumber Co.

Band Mills : LAKE PROVIDENCE LA.

Southern Office : MEMPHIS, TENN.

Bank of Commerce Bldg.

Northern Office : SOUTH BEND, IND.

MANUFACTURERS

Plain Red Gum

Quartered Red Gum

Plain Sap Gum

Quartered Sap Gum

Cottonwood, Cypress

Tupelo, Ash, Elm, Oak

CHARLES O. MAUS

Canadian Representative

H. W. Darby Hardwood Lumber Company

Manufacturers of

Hardwood Lumber

Red and Sap Gum a Specialty

Gum, Oak, Tupelo, Poplar
Ash, Elm, Cypress

Rooms 1531-33 Bank of Commerce & Trust Bldg

MEMPHIS, TENN.

Mills at :

Kosciusko, Miss.
Greenwood Miss.

Money, Miss.
Ruleville, Miss.

“The Cabinet Wood Superior”

Nature has given cabinet makers and interior trim workers many ideas to realize their ambitions of producing designs of character.

Nature has also given the “Cabinet Wood Superior” to assist in applying these designs.

“The Cabinet Wood Superior” Is, Without Question American Black Walnut

The soft tone, deep lustre and delicate shades of rich brown color of American Black Walnut places it above all others.

Consider well the class of wood you use and we venture the assertion, your decision will be

American Black Walnut “It’s Classy”

Walnut Exclusively—All Grades and Thicknesses.

Pickrel Walnut Company

St. Louis, Missouri

The Story of Our Business

Chapter IV.—Yazoo Valley Red Gum

Early in our lumber experience, when gum was in bad repute, we became convinced that this wonderful wood had a great future. A wide knowledge of the southern timber growth enabled us to select the Yazoo Valley district as the home of a superior quality of gum. After specializing for a few years in other woods, we decided in 1906 to cast our lot with the red gum in the Yazoo Valley. We staked our future on this wood and we were one of the pioneers in introducing a high quality of this product to the consuming trade. Our long experience and careful study in manufacturing, piling and drying this wood enables us to offer the trade a very satisfactory article. This wood is soft in texture, easily worked, and it can be put through the machines with greater speed, and with less waste and tearing of the grain than any other fine wood. The Red Gum is rich in color with a character which gives it distinction. The splendid growth of the timber produces lumber of excellent widths and lengths with a better cutting value than any other cabinet wood. However, the lumber speaks for itself better than any words we can write, and buyers of this wood should inquire for prices on the following items of dry stock, ready for prompt shipment:—

QUARTERED RED GUM				
3 cars	4/4	No. 1	Common and Select	
2 "	5/4	"	"	"
1 "	6/4	"	"	"
1 "	8/4	"	"	"

PLAIN RED GUM				
1 car	4/4	No. 1	Common and Select	
3 "	5/4	"	"	"

SAP GUM				
2 cars	6/4	No. 1	Common and Select	
1 "	8/4	"	"	"



BELLGRADE LUMBER CO.

MEMPHIS, TENN.

Mills at Isola, Miss., Louise, Miss., and Cary, Miss.

RED GUM

("AMERICA'S FINEST CABINET WOOD")

Before RED GUM became recognized as a cabinet wood which manufacturers are proud to use and to tell about, and which *consumers* are proud to own, a good many high-class furniture manufacturers were obliged to call RED GUM by some sort of pretty nickname.

NOW ALL THAT IS CHANGED

The RED GUM producers have spent (and are still spending) thousands of dollars to tell the public that RED GUM is not only "America's most winsome wood," and a *thoroughly reliable wood* when properly manufactured, but also that to have a suite of "Genuine American RED GUM" in one's home is a *fact to boast of*.

As the public is being continuously educated to CALL FOR RED GUM BY NAME, isn't it good policy for all furniture manufacturers who make RED GUM furniture to call it by its RIGHT NAME and nothing else? Isn't it GOOD BUSINESS to do so? If they *don't*, what will they say when the public ASKS for "REAL RED GUM?" Are we right?

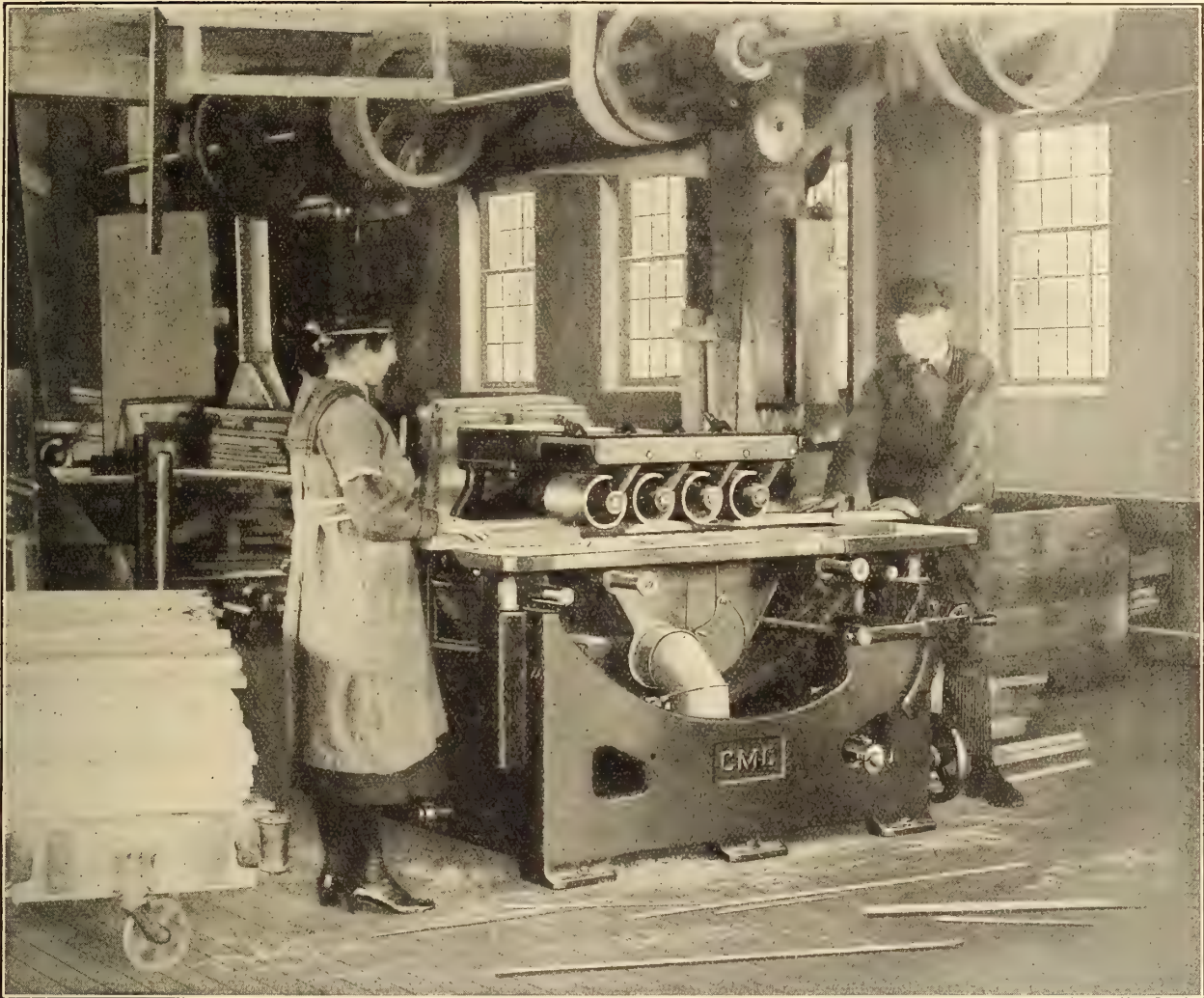
Write us for samples, particulars and general information.
Our reply will be prompt, personal and dependable.

GUM LUMBER MANUFACTURERS' ASS'N

1314 Bank of Commerce Building, Memphis, Tennessee



Talk About Cutting Costs!



No. 611 Straight Edging and Jointing Machine

This boy and girl are breaking out stock in one of the largest furniture factories in Canada

*They are doing the work formerly done by six men
They are doing it straighter and better
They are saving a man's wages every day in stock
They are doing it with a saving in power
They are working in comfort and safety*

These facts should interest every wide awake furniture manufacturer and we are prepared to furnish him with full details and description of our machine.

CANADA MACHINERY CORPORATION, LIMITED, GALT, ONTARIO

Toronto Office and Warerooms :

Brock Avenue Subway

SOUTHERN HARDWOODS

Well Manufactured from Good Timber

Unexcelled Quality and Service

For twenty-five years Paepcke Leicht quality hardwoods have satisfied the most exacting users in the wood-working industries of the United States, Canada and Europe.

Strict uniformity of inspection and quality year after year, with a truly superior service, have consistently kept old customers on our books.

Your interest, also, lies where you can get the most in satisfaction and value.

We Specialize in Oak and Gum

Paepcke Leicht Lumber Company

GENERAL OFFICES
Conway Building
111 West Washington Street
CHICAGO, ILL.

BAND MILLS
Helena, Ark.
Blytheville, Ark.
Greenville, Miss.

ROBT. BURY & CO., Canada

LIMITED

Hardwoods and Veneers

LUMBER

Mahogany (250,000 ft. in stock, all kinds)	Birch
Walnut	Basswood
Qtd. White Oak	Maple
Plain Red Oak	Beech
Poplar	Elm
Gum	Ash
And all U. S. A. Hardwoods	And all other Canadian Hardwoods

VENEERS

SAWN	Vermillion	Birch
Qtd. White Oak	Poplar	
Qtd. Red Oak		ROTARY CUT
Plain Oak		Birch, Poplar, Ash, Gum, Walnut, Basswood, Maple
Mahogany (all kinds)		SLICED
English Oak		Mahogany, Walnut
Teak Ash Cherry		Figured Gum

We also Specialize in

Teak, Vermillion, English Oak, Three Ply, Inlays and Crossbanding.

Head Office and Veneer Warehouse

1 Spadina Avenue, TORONTO

Lumber Yard and Mill

Foot Spadina Ave., TORONTO

CANADIAN WOODWORKER and Furniture Manufacturer

A Monthly Publication of Trade News and Practical Information, reaching the factories producing Interior Finish, Doors, Sash, Flooring, Boxes, Aeroplanes, Furniture, Pianos, etc.

Woodworker Publishing Company, Limited

345 Adelaide Street West - - - - - TORONTO

Branches:

Montreal, Winnipeg, Vancouver, New York, Chicago.

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Vol. 19

Toronto, June, 1919

No. 6

Efficient Fire Protection—Its Urgent Need.

This issue of the "Canadian Woodworker" might well be called a "fire prevention" number. Realizing the need of more adequate fire protection in the different woodworking plants throughout the Dominion, we have devoted a considerable amount of space to this subject and have tried not only to impress upon the minds of woodworkers the necessity for more efficient protection but have pointed out the danger points and suggested means for reducing the risks.

Canada has the distinction, not the proud distinction, of having the highest known pro rata fire loss of any country in the world. In round figures the Canadian loss is \$4 for each man, woman and child in the country. The fire loss in the United States for 1918 averaged \$3 per capita, while an examination of the records of five of the great European countries show that they have been able to reduce their average fire loss to the comparatively small sum of 33 cents for each person in the country.

The Canadian fire loss for 1918 is estimated to have been about \$33,000,000. This is a tremendous loss for any country to be forced to sustain year in and year out and a greater burden for a growing country like Canada, where every dollar is needed for the re-establishment of the commercial life of the country on a sound, permanent basis and for the financing of the large export trade that awaits to be developed.

It is all very well for the owner of a plant to carry on contentedly from day to day, secure in the knowledge that he is amply protected against fire loss by the insurance policies that he carries. If the insurance company is willing to assume his risk why should he go he go to the additional expense of installing fire prevention and protection appliance? That the damage is covered by insurance does not alter the fact that a fire loss is a serious economic one or that the wealth

of the country has been decreased by the amount of that loss. In addition there is the wage loss sustained by the employees who are thrown out of work, the loss to the country through the decrease in production, the loss of customers who were only acquired after an outlay of time and money; and also that the material used for re-building and re-equipping the plant could have been used to greater advantage in producing commercial commodities and thus adding to the wealth of the nation, and further that an inadequately protected plant is a menace to the surrounding buildings and to the community in which it is located.

One pays for fire protection whether protected or not. How much better is it then to have this security. One also pays for the protection of other industrial plants throughout the country. The amount paid is more than the amount necessary to adequately equip all factories and kindred buildings with the most efficient, up-to-date appliances made. The value that the insurance companies place upon efficient safe guards is shown by the fact that a reduction of as high as 90 per cent. has been made on the insurance premiums of plants that have installed modern protection equipment. The premium saved will pay for the installation in a few years, then the amount saved is profit.

To show that protection is paid for whether secured or not the year 1916 is taken for an example. The fire damage to properties insured by companies licensed by the Dominion Insurance Department amounted to \$15,114,000. To distribute this amount these companies collected from the citizens of Canada \$27,784,000 or \$12,670,000 more than the loss incurred. In other words for every dollar of loss distributed \$1.83 was collected. The woodworking industry presents greater risks than many other industries, and it is likely that this figure of \$1.83 would be considerably larger if the data were taken from this industry alone.

That the authorities at Ottawa realize the serious menace of the annual loss is shown by amendments that were recently made to the criminal code of Canada. It provides for the penalizing of carelessness and negligence in respect to fire. Any person who by negligence causes a fire may be fined \$1,000 or imprisoned for two years or both. Negligence is further defined as follows: any owner or occupant of property who has failed to maintain his property as provided for by the by-laws of the community where the property is situated or by any statutory requirement, shall be deemed guilty of negligence. This brings the responsibility home to the person who fails to take the necessary precautionary measures.

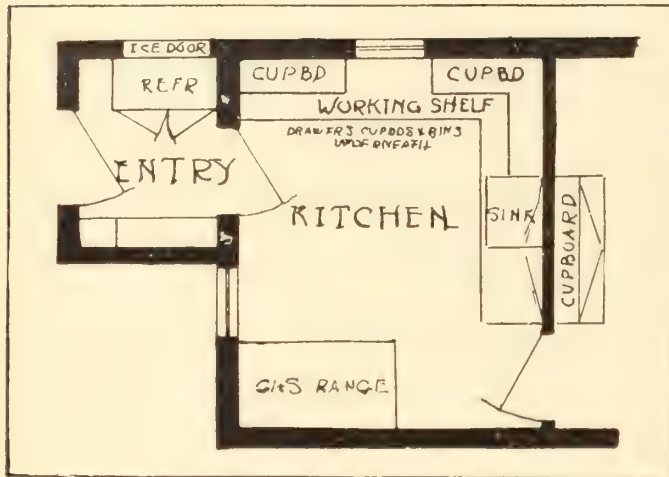
Too much stress cannot be laid on the absolute necessity for every woodworker to take all possible precautions to prevent or minimize the danger of fire occurring in his plant. Do not delay but act at once for the season when the risks are the greatest is now at hand. A few dollars spent today may not only save your plant but will be returned in a few years, through the savings effected on insurance premiums.

Ideas and Suggestions for Interior Trim—No. 4

Saving Steps in the Home—Desirable Appliances for Kitchen and Pantry—
Remodelling Home Offer Opportunities for Practical Improvements

By W. H. Shaw

The kind of houses we live in greatly influences our lives. Not alone is our comfort affected but our housing has much to do with our efficiency. A cold, dark house is not only less comfortable than a warm, sunshiny one but the care of a badly planned house



Convenient arrangement for small kitchen

involves a great waste of time and energy.

Many otherwise knotty household problems find a solution when housed with ample, well planned closet and storage room, good laundry equipment and drying space, a convenient and well equipped bathroom and above all a kitchen and pantry which provides well chosen and carefully placed furnishings. The kitchen and pantry are without a doubt the most important of all, because they are the great industrial centre of the home.

When we hear our grandmothers tell of the good things that were made in the old farm kitchen, it sometimes makes us doubt if modern equipment or change of method is so necessary after all. But we too often forget that conditions and requirements have changed in every way since our grandmother's time. Then, each kitchen with its ample fresh air and sunshine was a manufacturing plant or factory caring for the products of the farm. The cool cellars made storage a very simple problem.

Changed Conditions Demand New Methods

We are living now in crowded and congested cities and the problems have changed accordingly. A wonderful revolution in housekeeping has taken place. Many of its industries have been transferred to factories, the lives of women have been emancipated from much heavy work and housekeeping. Today represents greater problems and responsibilities along economic lines. Buying instead of manufacturing is the important thing for the housewife to consider, in other words housekeeping has become a business and as our activities have progressed so our workshops and methods must necessarily manifest progress.

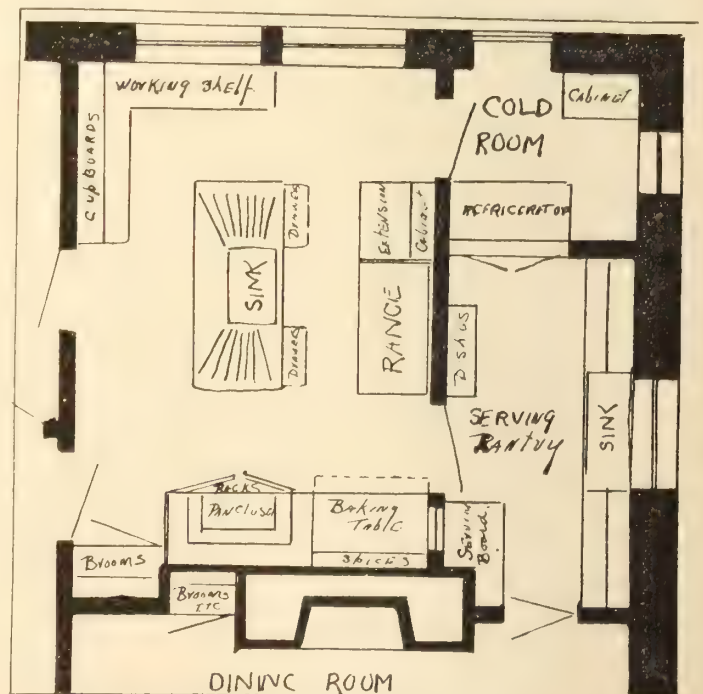
If a man is about to go into business, one of his first questions naturally would be "Where will I lo-

cate? What sort of a store or office can I get and how can I fit it up to best meet my business needs?" So when the house is planned one must as carefully consider the kitchen and pantry, for these important rooms are to be the workshop and office of the business of the home. Government statistics say that 90 per cent. of the housewives of Canada do their own work. No detail is too small for careful consideration, if time and thought can make the work and workers more comfortable. The equipment must not only be selected carefully but the relationship of the different parts of the equipment must be given much consideration, for in this arrangement lies the secret of the efficient home.

"And grow up to be an architect—a person who quarrels with women about the location of their kitchens and pantries." I wish I could remember in which one of the books of a year or two ago, that the observation above quoted, appeared. But I do not, suffice to say that it has come to me today, with surprising clearness, while writing this article. How surely the day has arrived when a house is considered from many varying angles and that establishment is indeed considered incomplete that does not reveal a back door and servants' wing in keeping with the front entrance and the company part of the house.

Many Problems in Kitchen and Pantry

The arrangement of the pantry, its shelves, drawers, etc., and the arrangement of the kitchen dresser depends considerably upon the size and shape of the pantry and kitchen. Each house representing a different problem, but mostly the arrangements depend on the requirements of the housekeeper. Every mistress of a home has her own ideas as to where she wants



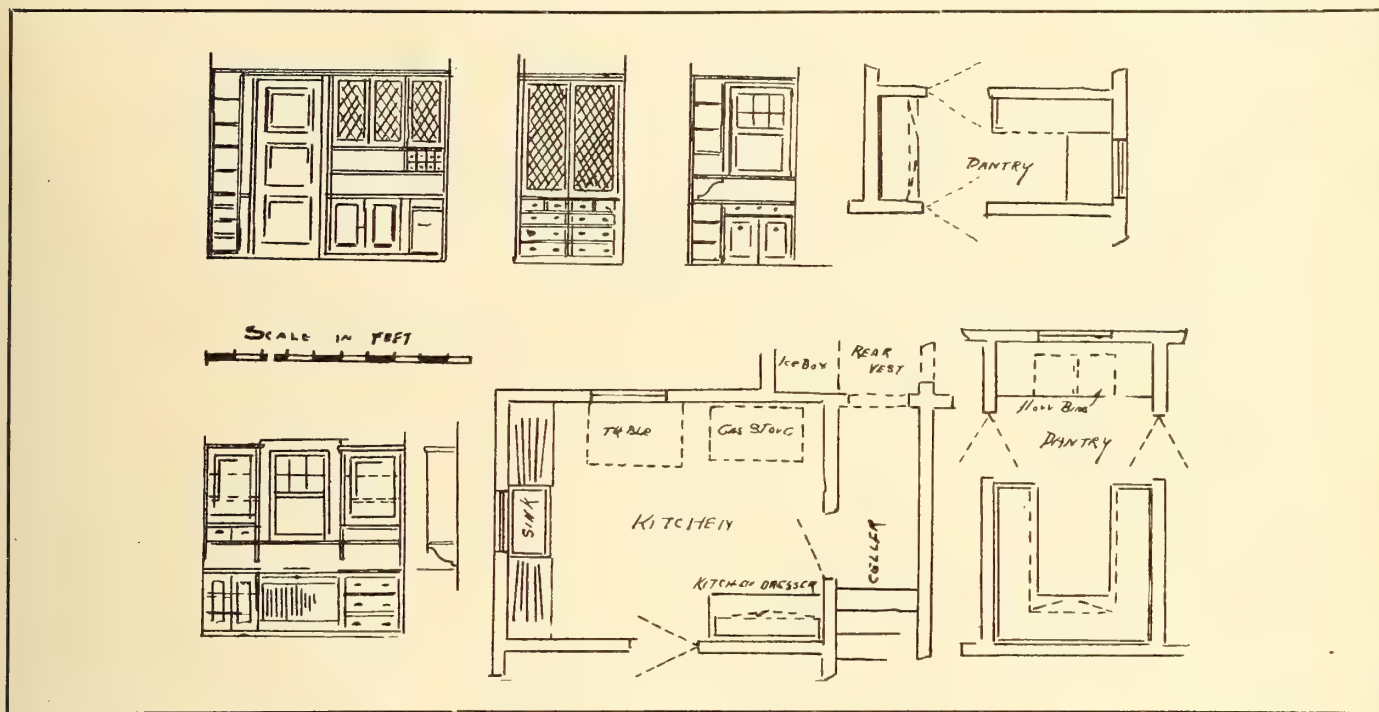
More pretentious kitchen for large home

the chinaware, silver, linen, kitchen utensils and food stuffs, and her wishes should be respected.

The first requirement should be convenience rather than appearance. If one prefers to do their pastry work in the pantry away from the heat of the kitchen, the pantry should be provided with at least two flour bins, one for white flour and the other divided into two compartments for other kinds. The best arrangement is to have three bins, two of them divided into

bins just under the kneading shelf. A good size for a spice box, inside measurements, is two and a half inches wide and deep by three inches long, and the box made of quarter-inch boards.

Near the bin should be some open shelving whereon to set the pans of bread, pies and other pastry as they are made. These open shelves are also necessary as a place to lay the dessert and other dishes which are to be placed on the table during the progress of the meal.



Designs for cupboards and layout for pantries

compartments, in this way, white flour, corn meal, whole wheat, rye flour and sugar can be accommodated.

Wheels for Flour and Sugar Bins

The flour in the bins should be easily accessible and the bins should be made so that they can be removed at pleasure for cleaning around them. There are several ways of doing this, the best, however, is to have them roll back and forth on four large wheels.

The wheels can be made of wood, iron, or china, and in this way, the bins can be easily managed and easily removed. The size of each bin depends somewhat upon the amount of flour it is desired to store at one time, and the space in which they can be placed. Too much flour in a bin makes it hard to move. A good size is 20 inches wide, 20 inches deep and 26 inches from floor to the top, outside measurements. The bottom of the bin should be at least four inches from the floor. Above the bins should be a flat shelf at least 24 inches from front to back and 30 inches where it can be allowed. Above the shelf should be a pantry window. There should be a smooth board above the shelf at the wall, 16 to 20 inches high. The shelf should be 30 inches from the floor. It is best to have a movable kneading board and a place for keeping it handy.

Spice Boxes are Convenient

Directly under or within reach of the shelf should be one or two small drawers in which to keep pastry utensils. Eight or ten spice boxes should be close at hand, either in the pantry fixtures or a separate case on the wall. They are sometimes placed above the

The lower part of the pantry fixtures should be divided into compartments and drawers to suit individual requirements. Some housekeepers would require, in the pantry fixtures, a place for storing bowls, kneading board, and a place for keeping the extension table boards. A little careful planning will usually find a place for all of these.

Each pantry should have several broad drawers for table linen, and small drawers for knives, forks, etc. The average table cloth is six feet wide and folds up to eighteen inches, it needs a drawer about two feet long to contain it properly. A six foot drawer for table cloths is sometimes used in a large pantry. It is a mere luxury, however, and is not absolutely necessary. It should be very shallow or when used it cannot be pulled out easily. A drawer about 28 inches by 28 inches by 3 inches deep inside measurements is really needed to contain doilies, centre pieces and tray cloths. It is best not to make the drawers very deep, but make more rows of them. A deep drawer when filled cannot be easily drawn forth. Four inches is a good depth for a pantry drawer and six inches should be the limit.

Suitable Sizes for Drawers

Drawers more than 24 inches wide should have two drawer pulls. Drawers should be built of seven eights boards and have a board shelf division between each row. The fronts of the drawers can be panelled for looks, but the drawers are kept clean easier when the front is one plain board rounded on the outward edges. All lumber in pantry fixtures should be perfectly smooth and dry, white pine if possible. In pre-

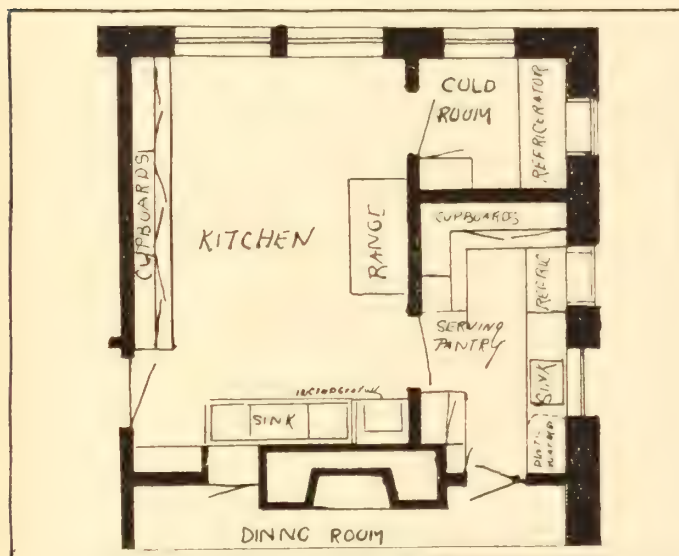
tentious homes, oak, birch or whitewood is sometimes used for all exposed parts. Pantry shelves should be seven-eighths boards. They are usually fixed in place but can be made adjustable.

At least 10 inches to 12 inches should be allowed between the shelves. The wider the shelves are, the greater should be the space between them, in order to be able to reach over one and take the dishes from behind. It is best to make the lowest space above the counter about twenty inches high, for platters often run as wide as eighteen inches and should stand on edge on the counter tops, at the back, for this purpose a narrow strip should run along the top of the counter near the back.

Pantry shelves and kitchen dresser shelves should not be more than seven feet from the floor, as higher than this makes too high reaching. The front of the fixtures, however, can be built up to ceiling to prevent the dust from gathering in top. Pantry-doors should be seven-eighths thick and narrow in width, having glass or wood panels. If glass panels are used they can be plain or leaded. All pantry doors should swing both ways from the hinge.

Small Home Complicates Problem

The size of some homes allows for two pantrys, a kitchen pantry and the butler's pantry, one for dishes and serving, the other for pastry work and kitchen utensils. This makes a very convenient arrangement

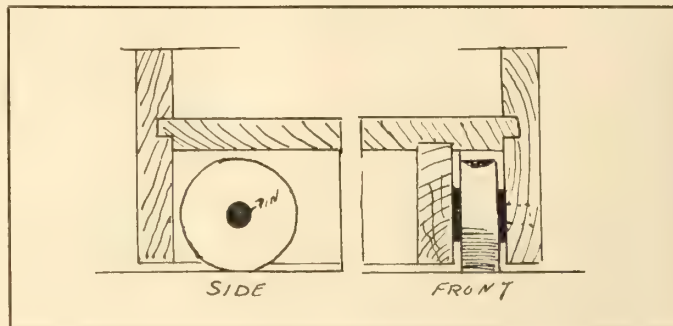


Suggestion for placing sink and cupboard

when the space is available. The hardest problem is a little home whose size and cost will not allow for any special pantry and the kitchen must do service for both. The small sketch shown offers a good solution of one problem. This kitchen is 9 x 12 feet, and is merely presented to illustrate a few suggestions.

It is surprising what remodelling will do to a last year's suit, an old fashioned house, and most of all, to the big kitchen in the old fashioned home. Remodelling is much like the touch of the fairy wand, and the house that once seemed quite impossible responds to the magic touch and is often made even more interesting and beautiful than if newly built. Mistakes so often happen, even in the most carefully planned new houses, that the chances are the house that has been lived in will reveal limitations and possibilities more clearly and the results after remodelling prove more satisfactory.

Perhaps we might say that the use of white paint and enamel for the kitchen has revolutionized the popular thought about kitchens and about what is to be expected in the service wing of the house. Housekeepers have discovered that a paint or color which



Method of attaching wheels to flour bins

"does not show the dirt" is not a thing to be desired in a kitchen. Coincident with this discovery has come many a help in the way of finish and decorations, also the enamelled range, which is a far cry indeed, from the stove of a few short decades ago, with its accompanying stove blacking.

In studying business methods we quickly discover that confusion and congestion are two things that must be avoided. Classification and a place for everything, and everything in its place are secrets which every successful business teaches. These are conditions then to be especially mindful of in working out the business department of the home. A lot is being said these days about efficiency. Some one was asked to define efficiency and the answer was "Efficiency, like some other undefinable things, is a state of mind." If this is true let's have efficiency of the best kind, for most of us know that a happy state of mind in the kitchen implies a contented household, on the same principle that all business runs smoothly when the vital machinery is carefully kept in good running order.

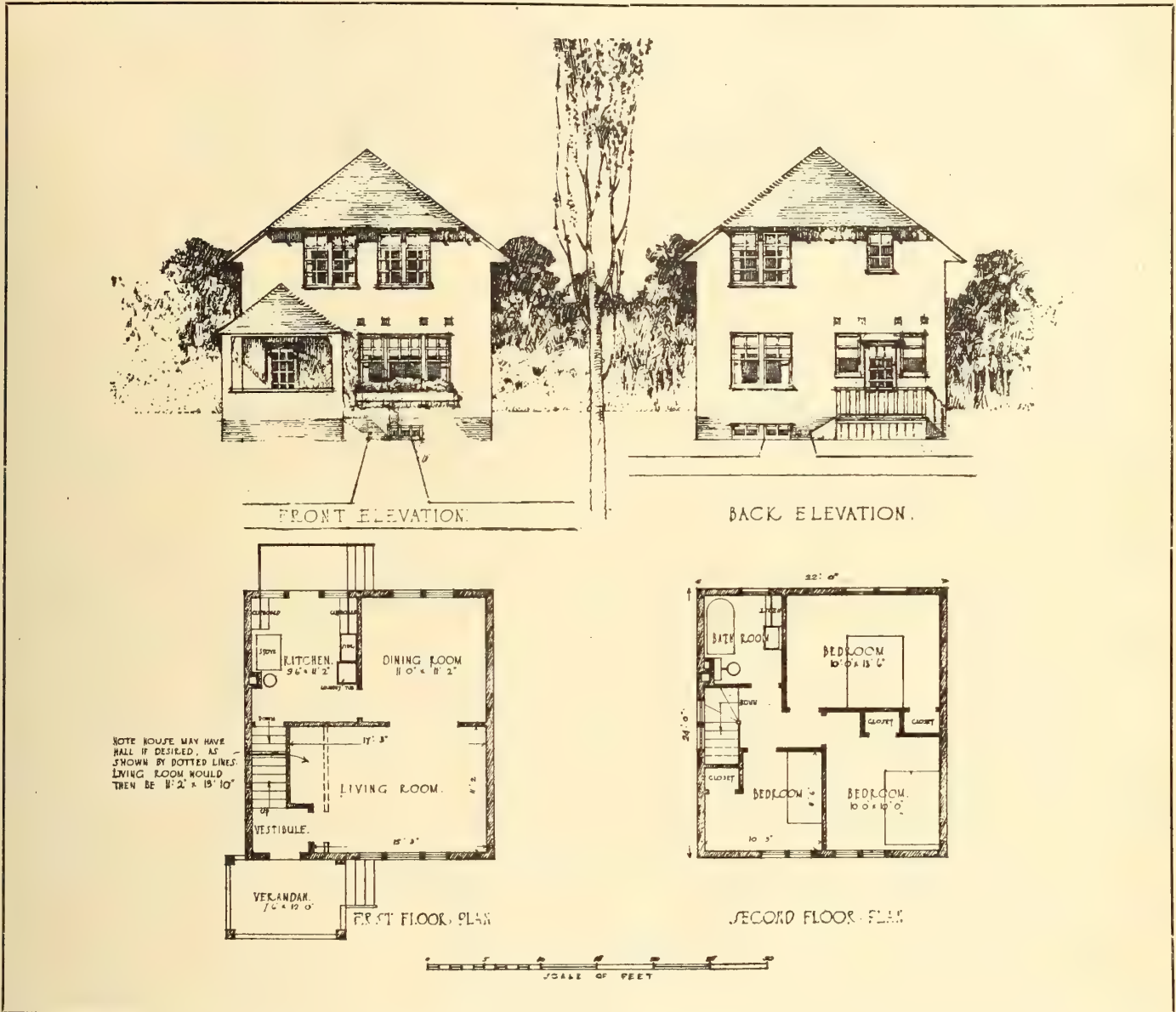
General Woodworking Conditions in Canada

The report from the Maritime Provinces is that the planing mill group is fairly busy, box factories quiet and the brush and broom factories busy. In the Montreal district the furniture and piano makers are busy, while in Quebec city the box and broom factories are quiet and the sash planing mills are very quiet. Other Quebec districts report good activity in all woodworking lines. In Ontario the furniture factories are working to capacity and with few exceptions sash and door factories and planing mills are busy. Chatham and Owne Sound districts report a dullness in these lines while the box factories at Peterborough are very quiet. Prairie conditions are not so good. The sash, door and planing mills were fairly active at Regina and quiet at Medicine Hat and Lethbridge. Things have improved slightly for the B. C. woodworkers. In Vancouver business has improved for the sash, door, planing and box men. In Victoria and Westminster the sash, door and box men are quite busy. Fernie, B. C., shows a slight improvement with a few planing mills running full time.

The electric motor saves space and belting. The future modern machine will probably have a motor for every spindle.

A Carefully Planned Six-room Home

Designed to Eliminate Waste Space—Cost of Construction Reduced to a Minimum—Alternative Layout Suggested



The accompanying sketches are of a plan worked out under the supervision of Thos. Adams, Town Planning Adviser for the Federal Government. The primary object in view in the planning of this house was to give as great an amount of accommodation as possible for the proposed expenditure; with this in view the hall space has been kept down to a minimum.

The kitchen is a convenient, well lighted work-room, the dishes from the dining room would, on being returned to the kitchen, be placed on the drainage board on top of laundry tub, then washed up and placed on the drainage board on left side of sink. When dried they would be put away in cupboard above.

The bathroom is situated directly over the kitchen, thus keeping all plumbing pipes together.

The windows to living and dining room are placed at a height that will enable one to see out when sitting down. The verandah could very easily be screened, and is of a size large enough to sleep in.

It is intended that the house should have a full

basement with concrete walls and floor, above the basement the walls might be of solid brick, or of hollow tile with roughcast exterior, or of frame with roughcast, brick veneer or clapboards. The roof would be of slate, asbestoslate or shingles. Heating would be by hot air furnace.

The interior finish, doors, etc., would be of pine of a simple stock pattern. Finished floors of B. C. fir or No. 2 hardwood.

An alternative layout for the first floor is shown by the dotted lines. By making a wall in this location and opening a door in the end of the hall thus made direct communication may be had between the kitchen and front door.

It will be noticed the roof comes below the ceiling of the upper rooms. This form of construction would lower the cost of building between \$50,000 and \$60,000.

At 20 cents per cubic foot this house would cost \$3,028; at 18 cents it would cost \$2,720.

A Blot On Canadian Industrial Life

Carelessness Responsible for Bulk of Loss—One Fire Every Hour in Ontario
Entailing Daily Loss \$42,000—Majority of Fires Preventable

Geo. F. Lewis, Deputy Fire Marshall for Ontario

For the creation of our "new wealth" we must rely on the bounteous provision of nature. We must recognize and develop the natural resources of our country and endeavor as far as possible, not only to utilize the dormant assets but increase and build up what nature in her goodness has so generously provided.

Canada is generally recognized as an agricultural country, on account of her excess in exports in this line, yet, only about one-third of our area is considered available for farming purposes. Canada's big business is lumbering and its many subsidiaries, so that we must recognize as of paramount importance in considering areas extending from the Atlantic to the Pacific.

Fire prevention has been undertaken by the governments of Canada on a large scale to protect the forests. The products of these forests enter into our homes and factories, which in turn make up our towns and cities. Where these products of the forest enter into our building construction they tend to increase the fire hazard and in cases of shingled roofs have been the cause of great conflagrations.

Make the Wood Fire Resistant

Millions of dollars are being spent to protect the forests from fire and additional millions for the protection of its manufactured products but very little has been done in a practical way to make wood fire resistant or even fire retardant. Here is an opportunity for those interested in the lumber industry and woodworking business to take up practical research work with the object of finding a simple means of overcoming combustibility of wood thereby giving this great industry a further impetus and establishing it on more staple lines.

A number of different chemicals have been used to make wood fire retardant or non-inflammable, but its combustibility is not thereby destroyed. Probably the most efficient protection to wood—for interior use—is silicate of soda. If boards of moderate thickness are brushed three or four times over on each side with a strong solution, they are rendered partially incombustible; they will, however, burn under intense heat. The silicate fuses and forms a glass which envelopes the surface, and even the internal fibres of the wood, if it is sufficiently saturated, are thus sealed up from the oxygen of the air.

A treatment known as "Burnettizing" consists of immersing the timber in a solution of zinc chloride. This tends to harden the wood and renders it partially incombustible. Asbestos paint is also used as a fire retardant; and white-washing is not to be despised.

Cleanliness Hand in Hand With Prevention

In the woodworking industry the fire hazard is ever present so that cleanliness and order are above all other things the most essential in the prevention of fires. Accumulations of rubbish, disorder and unclean conditions go hand in hand with fire. Much can be done by individuals to eradicate the terrible fire waste by removal of fire menaces and unnecessary hazards in one's own factory or home. Buildings of the most

thorough fire resistive character are liable to have fires among their contents if there is disorder and dirt and rubbish in the place. The factory, mill or warehouse where piles of litter are in evidence are apt to be the plants where discipline is so slack that workmen are permitted to smoke while on duty; where fire escapes are insufficient; where stairways and passages are blocked; and where fire hazards are allowed to go undetected.

The first bad condition to recognize, therefore, is disorder, and the first step in correction is that of cleaning up. The necessity for formulating rules for the guidance of employees is at the very foundation of fire prevention. Such rules must be simple, impossible to be misunderstood and must cover the essential points of fire prevention, fire alarms and fire extinguishment, as applied to the particular mill, factory or warehouse in question. Smoking should not be permitted in any factory, warehouse or mercantile establishment except in a fire proof room set apart for that purpose.

Majority of Fires are Preventable

Fully eighty per cent. of all fires are preventable and the great majority of fires are the result of carelessness. There are various divisions or branches of carelessness from which fire originate and it seems as though our careless habits must be changed before we can materially reduce the fire waste of the country. Of the twenty-seven classifications in which the causes of fires are divided in our statistical department the heading under "matches" takes the lead. During the year 1918 there were 991 fires caused by carelessness with matches or children playing with them, entailing a total loss of \$552,404. Carrying matches loose in one's pockets is a most dangerous habit. It is easy for a match pulled out by accident to be dropped among inflammable material if stepped on, cause a fire.

Spontaneous combustion is also the source of many factory fires, especially in oily waste or heaps of rags. Oily rags should be placed in metal containers and removed from the premises regularly every day. Spontaneous combustion may also occur in sawdust under favorable conditions and the finer the sawdust the more liable it is to occur. In a woodworking shop where there is a great deal of dust in circulation an additional hazard exists from the possibility of explosion. A dust explosion is very similar to a gas explosion, except the particles of dust are a little larger than the gas particles. As with gas—there must be a proper mixture of dust and air and a spark or flame present which has sufficient heat to ignite the dust before an explosion can occur. The finer the dust the more easily it is ignited and the more disastrous the explosion. The dust must be in suspension as a cloud in the air and the cloud be sufficiently dense before it can be ignited and the flame propagate through the cloud with explosive force.

Daily Ontario Loss \$42,000

During the year 1918 there were 9,740 fires in Ontario, causing a loss of \$15,673,240 constituting a daily

bonfire of more than \$42,000 worth of merchandise, produce and buildings. This enormous number means that a fire occurred on an average of every hour of the day and night. While sixty-four per cent. or practically two out of every three fires occur in our homes, yet the great monetary loss occurs in our industrial plants and mercantile institutions.

During the year 1918 there were 486 fires in manufacturing and industrial plants, which is five per cent. of the total number, and the loss sustained in this particular classification amounted to \$7,565,322 which is more than 48 per cent of the total loss for the year in the province. Analyzing this particular classification further, we find that twenty fires, or one fifth of one per cent of the total number for the year, caused a loss of \$5,790,557 or 37 per cent of the total fire waste. This would appear to be a serious reflection on the precautionary measures taken to avoid fires by those responsible for the management of our industrial plants.

Cleanliness, order and forethought with systematic inspection, capable watchmen, automatic sprinklers and other simple preventive means would do much to reduce this enormous waste to a minimum. In shops where a watchman is not employed it is a good plan for the superintendent or other responsible person to make a close inspection of the premises ten or fifteen minutes after all the employees have left the building for the night. Fires have broken out in plants a short time after the place has been locked up and investigations have developed the fact that it is a common practice for men to light their pipes or cigarettes before leaving and carelessly throw down a match which may smoulder among combustible material for sometime before it actually bursts out in flame.

Casks and pails when properly located and filled with water are of great value in the early stages of a fire and if intelligently used frequently prevent serious loss. Bicarbonate of soda is a fire killer. For effective work half to three quarter pound of bicarbonate of soda should be added to each gallon of water.

Chemical fire extinguishers like fire pails are devices of decided value when available and have the advantage of enabling the operator to direct an efficient stream immediately upon places which cannot be reached with pails of water. However, if a fire should occur the first thing to do is send in an alarm for the local fire brigade.

In order to secure efficiency from fire fighting ap-

paratus the owners, operators and employees should become familiar with the fire protection appliances, their location purpose, and use and to insure prompt action should have occasional drills.

Insurance Will Not Cover Full Loss

Insurance may be considered by many business men as a mitigating source in the loss sustained by fire; but the amount of insurance paid as the result of a fire can only partially reimburse the manufacturer for the loss he has sustained. No matter what the reimbursement from insurance may be you will be the loser if your plant burns down. You will lose through the scattering of your employees, your skilled workmen going to rival plants, through the loss of customers, loss of profits on unfilled orders, loss of good-will and the advantages you have gained through many years of important application to business and the great efforts made to firmly establish your concern.

Fire prevention means money in your pocket. Remember that every hour of the day and night somebody's property in Ontario has started to burn and yours is not immune. When it comes your turn to suffer your competitors will be called upon by your customers to fill the orders that you are unable to take care of. Loss through fire is not limited to fire damage, smoke and water must be taken into consideration and while the actual repairs for damage caused by water might entail only a few dollars, still the fact of your machinery and electrical equipment being put out of business may tie up your plant and cause damage to the extent of thousands of dollars.

A little forethought, care and cleanliness may prevent fire by remedying the cause. The loss due to one small fire may far outweigh the slight cost of providing modern fire fighting equipment or seeing that the accumulations of rubbish, sawdust and other combustible material is promptly removed; or, in the case of oily waste and rags, being placed in a metal receptacle. What precautions you should take depends upon your individual problems. Not any two cases are ever just the same. They are simple but basic.

The manufacturing industries are the backbone of any community and it is only through the success of great industrial undertakings that our towns, cities, provinces and even the Dominion itself can be successful and prosper.

Are You Overlooking a Good Investment?

Obvious Precautions Often Neglected—Money Spent Safeguarding Property Pays Good Profits—Value of Appliances Not in Doubt

Frank T. Daniels*

The attention of the public of Canada and the United States is periodically called to the economic waste caused by fires. This continues to be so great as to seem hardly short of a scandal. Although this form of destruction has been going on in the world for thousands of years; it is not entirely easy to secure known remedies or even to impress greatly the minds of those who should be actively interested to reduce this waste.

Every manager should know and practice the more obvious means of prevention. It too often appears,

however, that these matters do not receive the attention they deserve, and millions of dollars are lost through failure to remove promptly combustible waste material, to prevent smoking, to give proper care to rapidly moving machinery and to the separation of dangerous processes. It is also possible to have water barrels and buckets in every room subject to fire hazards. Good construction and lighting, and sub-division into relatively small areas are also factors in the right direction.

Fire losses are largely preventable, but as fires may be started by practically any person and in any line of activity the educational and other preventive meas-

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ures must be wide-spread. It is not without reason that manufacturers are looked to for leadership in this work. Their processes are fruitful means of starting fires and their concentrated values rapidly swell the volume of losses.

The history of the precautions against fire and of the means for extinguishing them furnishes a very interesting chapter in the story of human activities. Fires are and will continue to be started by a great variety of causes not easy to control. The great effort during the last half century has centered upon devices by which fires shall very promptly be extinguished or controlled. The main factor among such devices is the automatic sprinkler. This device is fairly well known among manufacturers, but its possibilities for good are not so well understood as they should be.

Insurance Companies Appreciate Sprinklers

It is natural that the fire insurance companies should be keenly alive to the economic value of sprinklers, and manufacturers and others should be equally impressed. The saving in insurance cost alone should be a sufficient argument. Roughly speaking, it may be said that a factory which has a sprinkler system supported by ample supplies of water will save 90 per cent. of its insurance bill. From this fact it is an easy step to the statement that a protective system will pay for itself in a very few years from the saving in insurance. This is one of the most obvious arguments and one which perhaps first appeals to the owner. Under the most favorable conditions a fire is a misfortune. Even though the property is fully covered by insurance, a fire brings about interruption of business, loss of custom and interference with organization. Moreover, a destructive fire means a loss to the community in the temporary suspension of wage-earning opportunity.

From the standpoint of the property owner, the wage earner, and the community as a whole, fire losses should be prevented by every available and reasonable means, and every agency should be employed to extend the knowledge of prevention. While much may be done by the simple means first suggested above, every manufacturing plant should be provided with automatic sprinklers and in general with private hydrants in the yard, together with a good supply of hose. Woodworking plants should also have small hose in manufacturing rooms. With considerable value involved, the expenditure for such protection should prove a good investment from the standpoint of dollars and cents, even at the present high prices. While it is well for a manufacturer to be hopeful and confident of the future in general, he should consider

the worst which can happen to him in case of a serious fire. He will wish to know, however, something of the extent to which the claims of a protective system can be substantiated.

Results Achieved are Noteworthy

The National Fire Protection Association has compiled many interesting facts bearing upon this matter, and records have been kept for about 22 years. It has been found that out of nearly 21,000 fires more than 82 per cent. have been extinguished or controlled by the opening of not more than 10 sprinklers at each fire. Out of this great number of fires more than 65 per cent. were practically or entirely extinguished, more than 30 per cent. were held in check until hose streams or other help could be added. This means that more than 95 per cent. of fires have shown a satisfactory performance on the part of sprinklers.

Coming specifically to the wood-working industries, there have been studied more than 900 fires, of which 56 per cent. have been extinguished by automatic-sprinklers alone, 34 per cent more have been held in check, giving a record of 90 per cent. satisfactory performance even in the hazardous class of woodworking. In substantially all cases where sprinkler performance has been unsatisfactory, the records show more properly non-performance, due to frozen piping, closed valves, or other conditions which prevented normal action. These published records indicate plainly that the great majority of destructive fires are preventable, and available figures prove that the means of prevention furnish an excellent return to the owner, the workman, and the community. There is also plain evidence that managers must take an active and sustained interest in fire prevention. Automatic mechanical devices can accomplish a great deal, but the problem, not unlike the problems of factory production, must have the interested and intelligent co-operation of the human element. Moreover, the problem is so intimately connected with that of production, that it merits equal attention with the latter.

Monthly Fire Record for the Year 1918

A study of the following figures will bring out the startling fact while the 17,355 fires which occurred during 1918 caused a property loss of \$33,623,000, out of that number, 62 fires accounted for \$14,650,000 or 40 per cent and 276 or 1½ per cent of the fires is responsible for a loss of \$23,236,000 or 60 per cent of the total loss for the year. The bulk of these fires occurred in industrial plants and strongly emphasize the need for greater protection of existing industrial properties.

	Fires where loss exceeded \$100,000		No.	Fires with loss from \$10,000 to \$100,000		No.	Fires with loss less than \$10,000		No. of Fires	TOTAL Loss
	No.	Loss \$		No.	Loss \$		No.	Loss \$		
January	8	1,057,000	34	873,000	1,499	535,000	1,541	2,465,000		
February	7	1,467,000	15	319,000	1,423	602,000	1,445	2,388,000		
March	3	575,000	15	668,000	1,264	537,000	1,282	1,780,000		
April	5	1,500,000	21	1,120,000	1,802	723,000	1,828	3,343,000		
May	10	1,652,000	19	906,000	1,528	1,177,000	1,557	3,735,000		
June	6	1,277,000	15	833,000	1,723	1,006,000	1,744	3,116,000		
July	7	960,000	19	841,000	1,246	1,395,000	1,272	3,196,000		
August	3	812,000	22	1,183,000	1,638	971,000	1,663	2,966,000		
September	1	250,000	15	419,000	1,107	667,000	1,123	1,336,000		
October	5	3,650,000	9	646,000	984	1,121,000	998	5,417,000		
November	2	300,000	14	402,000	1,518	965,000	1,534	1,667,000		
December	5	1,150,000	16	376,000	1,347	688,000	1,368	2,214,000		
Total	62	14,650,000	214	8,586,000	17,079	10,387,000	17,355	33,623,000		

Preventing Fires in Woodworking Plants

How Some Manufacturers Eliminate Fire Risks—Hazards Reduced Through Attention to Details—Appliances That Have Proven Their Worth

By Geo. H. Greenfield (Member N. F. P. A.)

The various processes incidental to woodworking plants, furniture factories, and allied trades continuously create fire hazards. We know that these hazards far too frequently develop into actual fires by reading our daily papers, but give a sigh of relief when we come to the final statement that Mr. Blank says "His loss is fully covered by insurance, or nearly so,"

If one were behind the scenes, however, he would find that very often Mr. Blank is not covered to the extent that he thinks, and that he has no idea of present day values. Further he may not even be able to collect the amount that he anticipates. The question now arises has Mr. Blank taken any real preventative measures regarding the fire hazard in his factory in case a fire should start in same, and thus really justified himself in collecting his insurance.

The most obvious fire hazard is caused by the production of wood refuse, often faster than it can be disposed of. The standard method of getting rid of wood waste is, of course, by means of a blower or exhaust system, and burning the refuse for steam raising purposes. Many small plants, and also several large ones with which the writer is familiar have no means of dealing with wood refuse in excess of the steam raising requirements at the moment, and same is allowed to run out on the boiler room floor, often accumulating in large quantities. Ignition of this refuse when cleaning fires or from firemen smoking is not unknown.

Approved Method of Shavings Disposal

The approved method of handling wood refuse is to provide a vault of fire resistive construction. The cyclone to be arranged so that from a second outlet the excess or whole of the refuse coming over from the mills can be discharged direct into the vault. The vault door for removing refuse for hand firing is to be kept as small as possible, and the sill well above the boiler room floor. The

door should be kept well back from the boilers and not in direct line in case of sparks. The opening into the vault should also be arranged to be of the standard automatic type for vertical operation.

A large ventilator should be fitted in the roof of the vault, the openings protected with wire screens. At least a 1½ inch live steam pipe should be run into the vault with a conveniently arranged control valve, and notice "Open in case of Fire in Vault." The blowers on fans in connection with the wood refuse system, are preferably arranged in brick or concrete enclosures.

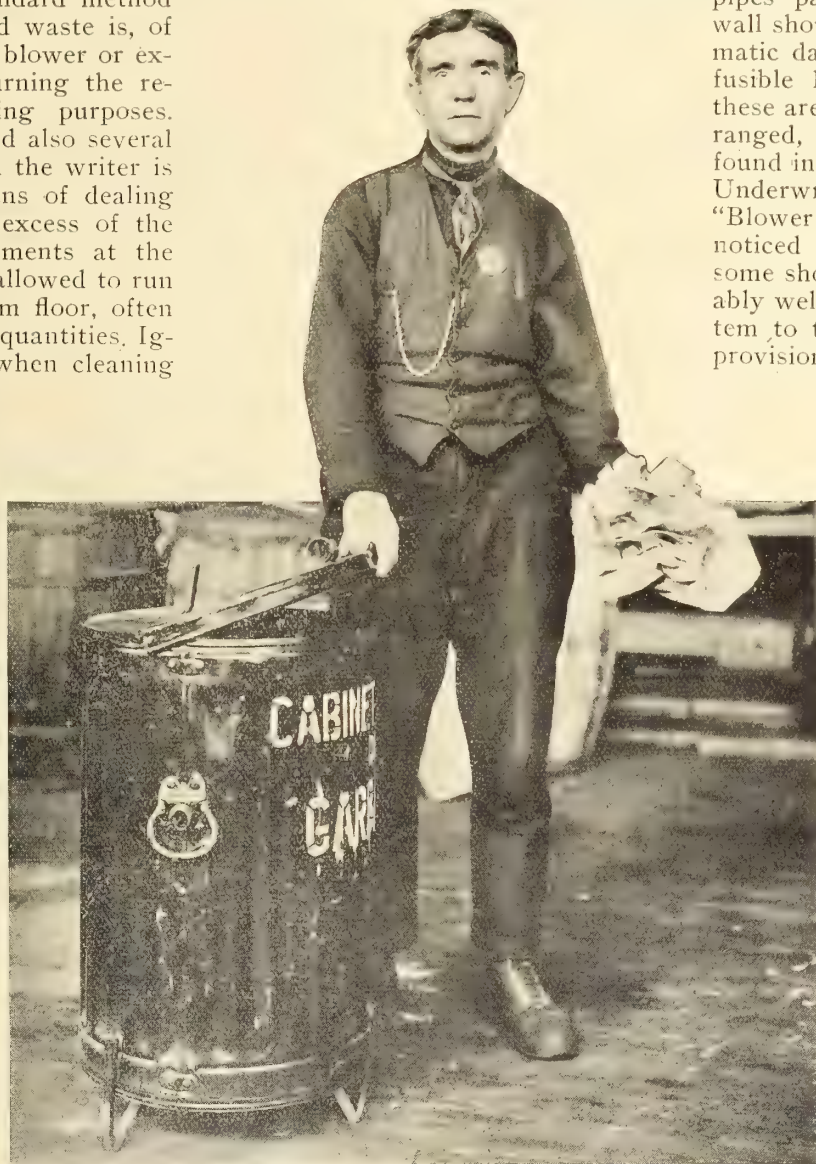
A common arrangement of the refuse suction pipes is under the floor of the shop in trenches on the ground floor. There is a tendency for fine dust to collect in these trenches through the cracks in the flooring. Although the means of ignition is not always apparent, a large number of fires start in these places, and all pipe ducts "Must be regularly cleaned."

All refuse pipes passing through a fire wall should be fitted with automatic dampers controlled by a fusible link outside the pipe, these are easily and cheaply arranged, full details may be found in the National Board of Underwriter's pamphlet on "Blower Systems." It has been noticed in several cases that some shops that have a reasonably well fitted-up exhaust system to the machines, have no provision made for picking up

sweepings from the floor, several should be arranged so that the floor can be maintained clear with the minimum amount of labor. There is no difficulty in arranging suitable self-closing doors on these sweep up openings either controlled by a spring, or lever, and weight.

Finally in dealing with wood refuse, "All floors must be cleaned up before closing and no refuse left in the building overnight." This clean up is part of the process of manufacture, and must be allowed for in the cost, and not looked upon as a burden, or nuisance.

The dust hazard



Self-closing can for waste material

is frequently not appreciated. All woodworking and finishing processes produce fine dust which settles on all horizontal surfaces, inside pulley rims, on beams, around bearings, etc. This dust easily ignites from hot bearings, sparks from a saw, and various other causes. In the event of a fire occurring of serious proportions this dust may be disturbed by a draught, or other means and ignite rapidly after the nature of an explosion, and rapidly spread the fire. All pulley rims and places where dust lodges must be regularly cleaned off, the dust collected, and removed.

Some classes of buildings, particularly two or more storey, where heavy machines are installed tend to have sagging floors and beams, which throws suspended shafting out of line, causing overheated bearings, and the possibility of a fire starting through the igniting of oil soaked dust in the neighborhood. The same overheated bearing hazard also arises from foundation settlement, and neglect of lubrication.

Danger From Belt Holes in Floor

There are few woodmills or factories that do not have belt drives passing through the floor. Two important features have to be provided for. First, a belt may run in contact with the wood opening, and ignite the woodwork, or dust by friction. The remedy for this is obvious. The second point is that all openings in floors are objectionable will tend to assist a fire to pass through.

Where practical, sheet metal or at least wood boxes should be provided over pulleys driven from the lower floor. If this cannot be done there are very few cases where a sheet metal (say No. 18 gauge galvanized iron) curtain cannot be built around the belt opening projecting downward two feet. A 2 inch thick wood curtain would be better than no protection for the opening. All unnecessary floor openings, or openings into other rooms or departments should be blocked up with material equal to that of the existing partition.

Light wells frequently found in upper stories are very undesirable and are best boarded over or concreted as the case may be. If absolutely necessary same should be properly protected by wired glass in steel frames where same pass through upper stories. When this procedure cannot be carried out provide metal curtain boards projecting downward two feet into each lower storey.

Elevators are preferably enclosed in order to secure the maximum amount of protection, but if not, as a final resort should be fitted with curtain boards as previously mentioned, or as a preliminary until the standard protection can be arranged for. The idea of protecting these openings is to prevent, or retard fire passing from one floor to another. Time is a very important factor in fire fighting.

Broken glass in windows, and skylights should be attended to at once as a fire has often been started by a spark from a locomotive or from a flying ember from a neighboring fire passing through the opening. Skylights should be of wired glass, when there are frame buildings or lumber storages in the vicinity. But if already installed with plain glass, the condition can be materially improved by providing wire netting screens $\frac{1}{2}$ to $\frac{3}{4}$ inch mesh on metal frames arranged about six inches distant from the glass.

Effective Measures for Main Buildings

It is not within the scope of this article to fully discuss main building construction, but attention is called to a few prominent features. In nearly all wood-

working plants there is a lumber storage yard, and generally several dry lumber storage sheds which are almost as a rule of frame construction. The result is the creation of a more or less severe exposure hazard to the main buildings. The walls of the buildings should be run up and parapeted on the exposure side, and any windows adjoining the lumber yard or frame building bricked up, if this cannot be done on account of cutting off too much light provide wired glass windows in steel sash. Doors to be metal clad.

A very large number of buildings have wood deck roofs, using either a prepared ready roof covering, or tar and gravel. Tar and gravel is by far the better covering of the two, on account of the protection it gives against flying embers from exposure fires. Where possible consideration should be given to using asbestos shingles. These shingles will not stand traffic, but are capable of resisting considerable exposure and the maintenance cost is very light.

Large areas in buildings are not favored and should be divided up by firewalls extended through the roof. Where buildings exist of from 200 to 300 feet long or over and division walls cannot be used a considerable improvement can be effected by sub-dividing the roof with No. 18 or 20 gauge galvanized iron curtains extending from the roof downward as low as possible, same being secured to the roof trusses. These curtains can also be of metal lath and plaster if preferred. The effect of these curtains is to retard the spread of fire along the roof, and gain time.

Curtain boards are of great assistance in sprinklered buildings of large size, as they, in addition to retarding a roof fire, tend to bank the heat on the sprinkler heads, thus insuring prompt and local action. This also conserves the water supply, by ensuring that sprinkler heads in the enclosed area directly over the fires are the only ones to operate.

Safe Guarding the Dry Kiln

Dry kilns introduce conditions that may cause difficult fires on account of their inaccessibility. The various kinds of kilns are: 1. The ordinary Baking Type, in which plain heating coils are used. 2. The Forced Circulation with a fan and heating unit combined separate from the kiln proper. 3. The moist air or humidity controlled system. They are often found of frame construction, sometimes even two stories high. They are often if not generally fitted with duck or canvas doors which in case of fire will not confine same. The kiln embodying the steaming process, and then gradual increase of heat with reduction in humidity or moisture content represents the best practice and these kilns are now usually built of fire resistive construction, with doors that will confine a fire for a time, should one start.

Some of the hazards introduced in the kiln are caused by the following: 1. An accumulation of dust and fine wood refuse collects under the steam coils, and is easily ignited. The coils often being so arranged that there is not proper clearance to allow of access for cleaning. 2. The steam coils are found in direct contact with wood supports. 3. In the case of frame construction kilns the walls and roof are hollow for insulation purposes, and in case of fire same is difficult of access.

Kiln fires are started from smoking, accidents with coal oil inspection lamps, spontaneous combustion of wood steam pipe supports (see steam pipe hazard), also ignition from overheating of fan bearings.

On sprinklered properties automatic sprinklers

should always be fitted in the kiln, but owing to the dense packing of the lumber on the kiln cars water is not very effective. Probably the best extinguishing agent is steam jets, and depending on the size of the kilns not less than a 1½ open steam pipe should be fitted, a control valve located well back and a notice "Open in case of fire in Kilns." On sprinklered plants fit steam jets as well as sprinklers.

The dry lumber storage is preferably located well back from the main buildings as a condition exists where a fire can make rapid headway if once started.

Looking After Equipment in Shop

The various machines in operation if neglected may cause fires through overheated bearings igniting the oil saturated wood dust or even the oil soaked dust igniting spontaneously under favorable conditions. Planers and sanders can be the cause of considerable hazard if the exhaustor connections are not properly made so as to entirely remove the fine dust that is produced.

Where glue pots are gas heated or gas used for any purpose, nothing but rigid iron pipe connections should be permitted. It is a very common fault to find rubber, also flexible metallic tube connections, and worse still a second gas cock on the burner. In natural gas districts same is commonly used for gluepots. Open flames of any kind are undesirable it being preferably to use steam if at all possible.

Gasoline will be frequently found especially in the repair shop. The handling of gasoline must be entirely prohibited except in "approved safety cans." These safety cans are of strong steel construction with a spring cap and internal gauze strainer that prevents flashing, and if the can topples over the spring cap stops the liquid from spilling.

The almost universal method of heating factories is by steam live or exhaust, and the principal hazards are: 1. Accumulation of refuse, old papers, overalls,



Efficient method of removing shavings from floor

etc., behind steam coils, same becoming ignited from smokers' matches, spontaneous combustion, etc. 2. The steam pipes and coils being arranged or coming in contact with woodwork. The true cause of the hazard is not always apparent or appreciated, but is caused as follows: The effect of a steam pipe in contact with wood is to gradually char same, or convert the adjacent wood into charcoal. Now this charcoal under favorable conditions is liable to spontaneous ignition, and the condition can arise even with steam

pipes carrying steam of comparatively low pressure when in contact with wood. All steam pipes therefore must be properly supported on iron hangers or rollers and a free air space maintained at all times.

The finishing processes which include varnishing and painting, etc., necessarily creates considerable hazards owing to the class of material used. The danger arising in the storage, handling of the material, and disposal of the refuse. The varnish, paint storage



Wood charred by contact with steam pipe

and mixing-room should be isolated, and of fire resistive construction when possible.

The various liquid inflammable ingredients that are used such as, rosin oil, linseed, turpentine, wood alcohol, etc., should be kept in approved tanks, and handled with measuring pumps. These tanks are standard products, and fitted with elevating gear for hoisting barrels and drums over same for emptying. In certain cases where large quantities are handled buried tanks may be desirable. Naptha, benzine and gasoline must be stored in properly buried tanks fitted with vapor pipes and measuring pumps.

The lighting should be electric, wired in conduit, all lamps in vapour proof globes, and switches located outside building.

Provide sufficient heating coils but no more, same to be arranged in units so that good control is established. Heat is a great factor in assisting spontaneous combustion and should be reduced to a minimum.

Plenty of ventilation should be provided and ventilators screened with fine wire mesh about 30 to the inch. The outlet pipes carried well above the roof, and led down to the floor inside as gasoline and benzine vapors lie near the floor. Inlet grids must also be provided to ensure air circulation.

Reduce the interior woodwork to a minimum.

Sufficient carbon tetra-chloride extinguishers should be provided. The Pyrene extinguisher is of this type, and there are other good makes on the market. In case of open mixing cans or vats provide pails or bins with a mixture of sawdust and bicarbonate of soda (see later) and a scoop or shovel for throwing same. 2½ gallons foamite extinguishers are very effective on paint and oil fires.

Eliminating Finishing Room Risks

Varnishing and painting should be carried out in isolated rooms or buildings preferably of fire resistive construction.

One of the features is the disposal of rubbing rags and waste. These rags are saturated with various

oils, etc., and same are liable to ignition from spontaneous combustion, in fact, this is a very common occurrence. Metal cans must be provided to receive all refuse from these varnishing and painting processes, and same "Must be emptied every night before leaving" and contents burned. These cans are known as self-closing garbage cans, are of strong metal construction fitted with legs to keep the bottom about four inches from the floor.

Wood alcohol, gasoline, benzine, and preferable naphtha should only be handled in approved safety cans. The best practice absolutely "Prohibits issuing these inflammable volatile liquids except in safety cans."

In certain classes of manufacture the articles are coated with paint, varnish or Japan in dipping tanks. The dipping process is considered extra hazardous principally on account of the large quantity of coating medium in use, and exposed.

All dip tanks should be made entirely of metal, and kept as small as consistent with the work in hand. Metal covers must be provided, and if possible held open by fusible links that will release the cover and allow it to close in case of fire. If possible to arrange same a draw off pipe should be provided at the bottom, so that the liquid can be drained outside to a storage tank away from the building in case of need, or when tank is not in use for dipping.

Dip tanks are often met with made of wood with drainage racks on a trough at each end. In case metal lids or covers cannot be arranged directly on the tank, at least provide covers that can be placed or lowered on the tank from the roof.

In the immediate vicinity of all dipping processes provide bins or buckets of sawdust and bicarbonate of soda with scoops or shovels. Small dip tank fires can sometimes be controlled by carbon tetra chloride or pyrene extinguishers. Never use water for fires in these tanks. Foamite extinguishers are very effective on this class of fire due to the blanketting effect of the foam.

The packing, shipping and warehousing departments in furniture plants require very careful treatment, as the soft materials used to protect the finish provide excellent fuel for producing a fire that will spread with extreme rapidity when once ignited. The upholstering department also contains large quantities of highly combustible matter.

The proper procedure would be to carry on this work in buildings of fire resistive construction divided up into relatively moderate areas by fire walls, communicating only by means of standard automatic fire doors, so that in case of an outbreak same can be quickly isolated.

Provide ordinary fire buckets filled with water, and a certain number of 2½ gallon soda acid chemical extinguishers.

Spontaneous Combustion a Chemical Process

Spontaneous combustion is mentioned as one of the hazards in connection with painters' overalls, rubbing rags, oily waste, dust and garbage in general. It is a chemical process, in which oxidization takes place more or less rapidly according to local conditions of temperature, ventilation, and humidity or presence of moisture in the atmosphere. Regarding spontaneous combustion as related to the particular trade processes under discussion the following substances are most commonly found that are susceptible: Linseed oil raw, or boiled. The boiled variety being the worst offender. Certain animal oils also are liable. The conditions

for this hazard are favorable when these oils are spread on textile fabrics, papers, painters' overalls, rubbing rags, and garbage with heat and moisture present, also poor or no ventilation. Lampblack is used in certain processes, and is liable to create the same hazard.

In order to reduce this well known spontaneous combustion hazard to a minimum, painters and varnishers must dress, and definitely keep their overalls and aprons in isolated, and preferably fire resistive dressing rooms. The dressing room to be provided with the minimum amount of heating, plenty of ventilation, and kept clean. Under no circumstances must any refuse in the varnishing and painting departments be placed in any but approved self closing garbage cans as previously described, same emptied every day and contents burned.

It is a most excellent practice to instal these self closing cans in all departments throughout the works as it is utterly impossible to discriminate as to what shall be thrown into any particular class of refuse.

A property on which woodworking processes are carried out is only properly protected against fire when its buildings are equipped with automatic sprinklers, yard with adequate hydrants, sufficient hose, etc., and strict attention paid to systematic maintenance of cleanliness. It being essential also that according to its size, a small but intelligent number of the regular employees be drilled and instructed in the use of the various fire fighting appliances.

Reverting to the automatic sprinkler. This apparatus or rather system of fire protection, although common and almost universally used in the larger plants is not given sufficient credit for its capabilities, nor installed to the extent that it ought to be. All industrial works endeavor to operate at a profit. Due to their wonderful record for extinguishing fires in their incipency the installation of automatic sprinklers constitutes in practically every case a remunerative investment. The saving in insurance rate being the measure of its efficiency, same amounting to a reduction of from 50 to 90 per cent, in many cases. An average installation will pay off the original cost in premium saved in about 5 to 6 years.

A sprinkler system consists of a net work of proper sized steel pipes connected to the water supply, suspended from the ceiling of the building to be protected, every few feet are fitted special outlets with the orifices closed with plugs which are retained in place by links that fuse or melt when a predetermined temperature is reached in the room, say 175 deg. Fah. At this temperature the water is released from the system exactly over the area where the fire is located, if properly installed and maintained there are exceptionally few cases where the fire is not extinguished at once. There are various refinements, also the system may be wet, or dry according as to whether it is practical to always maintain the buildings heated or not.

Appliances for Different Departments

We will now review some of the first aid fire fighting appliances which, however, are not intended to supplant the sprinkler system, and in most cases are installed in conjunction with same in fully protected plants that intend to obtain the minimum insurance rate.

Fire Buckets. Fire buckets should be distributed six to every 2500 sq. ft., or three buckets and one water barrel.

The buckets are preferably hung on brackets at-

tached to a board about 12 inches wide, and arranged so that the hooks are approximately 5 feet from the floor. A good way of bringing the buckets into prominence in crowded shops is to paint the boards red with white diagonal stripes 4 inches wide like a barber's pole. Always use a type of bucket that has a good handle on the bottom as it gives better control.

For all ordinary fires buckets are filled with water. In case same are likely to be exposed to freezing temperature a very satisfactory non-freezing solution is made as follows using ordinary commercial calcium chloride, same is usually sold in 100 lb. drums:

Lbs. calcium chloride added to each U. S. gallon	Approx. Freezing Point Deg. F.
2	18 above zero
2½	4 above zero
3½	8 below zero
4	17 below zero
5	27 below zero

Barrels and pails containing this solution should be occasionally stirred, the addition of extra water to make up that lost by evaporation will not effect

sinks quickly. A bucket of sawdust is also much lighter to carry and use.

All sand and sawdust pails are best provided with scoops to scatter the material. Secure same with a piece of light wire to the handle and solder the joint.

In cases of large dip tanks or where sawdust may be required in considerably quantities. The use of a large wooden bin with carrying handles, drop trap-door in front and long handled shovel is recommended. Use sawdust and bicarbonate of soda in same proportions as for the buckets.

Chemical Extinguishers. The ordinary type is the 2½ gallon soda acid extinguisher with loose stopple. These contain a solution of bicarbonate of soda and a small glass bottle of sulphuric acid.

In operation the extinguisher is simply turned over, which empties the acid into the soda solution and rapidly generates carbonic acid gas creating a high pressure which expels the liquid in a fine stream from the hose nozzle to a distance of about thirty feet. The use of these extinguishers enables small extinguishing streams to be directed into inaccessible places, and in some cases are more effective than plain water.

Large soda acid extinguishers are made in 20-40 and 60 gallon sizes mounted on wheels for factory use. The 40 gallon type represents a very useful fire fighting appliance to keep in case of emergency such as the water supply failing.

The ordinary 2½ gallon hand size should always be "hung on hooks 5 feet from the floor," and unless there is a particular reason to the contrary, a good system is to always locate same inside doors on the handle side, and paint notice outside "Chemical extinguisher inside door."

There are certain precautions to observe in order to secure safe and efficient operation. Soda acid extinguishers must not be exposed to freezing temperatures. "Non-freezing solutions must not be used." Full directions for charging are on the name plate. Test by actual operation, discharge completely, open up, wash out with hot water, pass water through hose and nozzle. See that strainer is clear. Stir soda solution to absolutely ensure all is dissolved, put proper amount of acid in bottle and screw on cap carefully, write date of charging on tag and secure to handle. Then hang extinguisher on its hook. Always purchase chemical extinguishers that bear the Underwriter's laboratory label, specifying, approved Underwriters 2½ gallon soda acid chemical extinguisher.

Carbon Tetra Chloride Extinguishers. These are of one quart size, one of the commonest types being the Pyrene.

The extinguisher contains a double-acting pump and is filled with carbon tetra-chloride or solutions in which same is the main ingredient. They are operated by pumping and directing the steam at the base of the fire, on striking same a dense inert gas is given off that effectually blankets the oxygen of the air and thus extinguishes or retards combustion.

These extinguishers are very valuable for use in electrical fires, gasoline, oil, paint and fires in similar materials. They are not, however, so efficient on such material as burning excelsior, wood shavings, papers, etc. Always ventilate well after using these extinguishers in confined situations as the fumes are liable to cause asphyxiation. In recharging extinguishers of this type be very careful no water or moisture is allowed near, do not wash the brass chamber, as if moisture is present a corrosive action takes place and the



Conspicuous rack for fire buckets

the strength of the solution. In cases where there is electrical apparatus installed a certain number of pails with fine sand should be installed.

For locations near paint mixing, and dipping processes, or for oil fires fill pails with clean dry sawdust and to each 12 quart pail add 3 lbs. of dry bicarbonate of soda and mix it well in with the sawdust. This mixture is very effective on fires in burning liquids as same floats and has a blanketting effect, whereas sand

mechanism will be damaged. The carbon tetra-chloride extinguishers will stand low temperatures down to about 50 degrees below zero.

Foam Extinguishers. This is a new type of extinguisher recently put on the market. The operation is very similar to the soda-acid type except that it throws a thick foam that very effectually blankets the fire and smothers same. These extinguishers are very effective on dip tanks, paint and oil in open vats or barrels, gasoline, etc., as the foam remains on the surface of the liquid for quite a long period.

They are not as effective as other types on such materials as wood refuse, papers, excelsior, etc., and must not be exposed to freezing temperatures.

Hand Hose. Where a water standpipe service is available hand hose is a most valuable form of protection, but owing to the possibility of water being shut off, or pumps failing hand hose must never be considered to take the place of fire buckets and barrels.

The usual practice is to use 1½ inch unlined linen hose in racks with brass nozzles having the tips reamed out smoothly to ¾ inch or ½ inch. Paint the nozzles outside to assist in preventing same from being stolen. This size of hose is easily handled by anyone, even boys. It is desirable to use only a one inch valve, as in case of it being necessary to drop the hose without shutting off the water an excessive amount of water is not lost.

Linen hose deteriorates very rapidly if allowed to become wet and not properly dried, and a good plan is to drill a ⅛ inch hole in the coupling outside the valve to act as a drain in case the hose valve leaks which would cause the hose to rot.

Maintenance of Hydrants and Hose in Mill Yards

Hydrants and hose should be flushed out every spring and fall and at the fall inspection a careful examination made to see that the hydrant valve is not leaking, as this means frozen hydrants, see that hydrant drains properly. To test a hydrant for drainage, open up valve till water flows then place palm of hand on open nipple and if water drains away properly a strong suction will be felt.

During cold weather hydrants must be inspected daily to see that they are not frozen, and can be done as follows: Try the spindle to see if same is free. Lower a small weight on a cord into hydrant. Sounding by striking the palm of the hand on the open hydrant nipple if water or ice is present the sound will be short, experience is needed for this method to be of value.

Hydrants found frozen must be immediately thawed out by alcohol, or a steam hose.

All hose in outside houses should be Underwriters' approved mill hose 2½ inch cotton rubber lined, play pipes Underwriters' standard with 1⅛ inch tip.

Definitely prove that your hydrants have same thread as local municipal fire dept. Keep coupling in good order and oiled. All hose should be run out and tested under full pressure every spring, and replaced as necessary.

Private Fire Department in Plant

No works or factory is too small to have a certain number of men trained in the use of fire fighting apparatus and a regular recognized fire chief. Periodical drills should be held, say twice a month, and hose run out, various appliances checked up and tested. Hold the drill in a different location each time so that all

may become familiar with the various parts of the works and all the apparatus properly checked.

Where regular hydrants and hose are maintained run hose out and see that sufficient is kept to properly cover the buildings. In many cases a shortage will be found if properly run out in easy curves with no kinks. See that there are sufficient permanent ladders located on buildings so as to give easy access to the roofs.

A small outside building or room with outside doors should be kept as a fire station and equipped



Replace all inflammable waste baskets

with a certain amount of apparatus ready for emergencies. The details entirely depending on the size of the works. Inspection of a great many works has revealed conditions where good equipment has been originally obtained but same has not been maintained and if ever needed same would be found wanting.

In summing up, continual inspection of the works is essential in order to detect hazards as they arise, but if rubbish be removed as made, and the works maintained clean the principal sources of danger will have been eliminated. At a works recently visited by the writer it was the custom for the men on the mechanical repair gang to take it in turn each week to make a complete inspection of the plant, covering all points, accumulation of rubbish, defective stoves, fire apparatus, electric light fuses, lamps, etc. A written report is submitted of all defects found, and endeavour made to find something that had been overlooked the previous week.

It has only been possible to deal briefly with the various items but sufficient has been said to point out that in practically all industrial processes hazards exist peculiar to the particular class of work being carried out. The main idea being to investigate each process and see exactly how the hazard can be reduced to a minimum, and just what class of fire extinguishing apparatus to install adjacent to the particular job or in the building, in order that should a fire start, same may be immediately got under control.

The larger the circular saw, the easier it will cut.

Large pulleys give better service than small ones.

Is Your Plant Fully Protected?

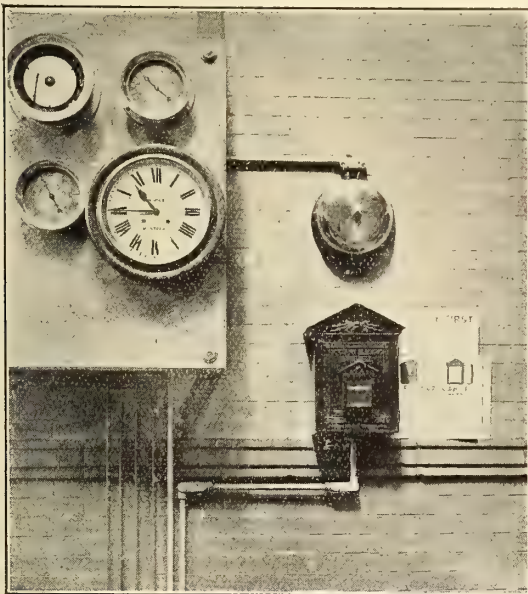
Reduce the Fire Hazards and Watch the Insurance Premiums Fall. Description of Modern Appliances That Have Shown Their Value

Electric Fire Alarm Systems

**A Few Minutes Saved Often Prevents Heavy Loss
—System Connected with Local Fire Department—Code Signals for Own Fire Fighters**

ONE of the greatest helps to the manufacturer in fire prevention work is the fire alarm system. It is the connecting link between the fire and the fire department. Without it, a serious loss of time occurs between the discovery of a fire and the arrival of the department. One or two minutes of time lost very often means the total loss of a building that could have been saved had the department arrived in time.

Even with the best distribution of boxes, it is impossible for a municipality to place a signal station in close proximity of every manufacturing plant, and for that reason, fire prevention engineers have devised systems for connecting such plants direct to the city fire department by means of auxilialized fire alarm apparatus connected to the nearest city street box. The advantages of such systems are two fold. First, they permit an alarm to be sent to the city fire department from any point on any floor in the building protected and second, they give the alarm locally, warning the employees of the danger and permitting them



Northern Electric fire alarm equipment.

to leave the building in an orderly manner thereby preventing a panic.

Industrial plant fire alarm system are manufactured in Canada by the Northern Electric Company, Limited. There are many different types which can be divided into three classes as follows: First: Code Signalling, non auxilialized. Second: Non-Code Signalling, auxilialized. Third: Code Signalling, auxilialized.

The first of the above is a local system only, having no connection with the city fire department. This is only to be recommended for plants that are located in a town where there is no municipal fire alarm system or in a plant maintaining and depending solely on their own fire department to combat any fire that may occur.

The second is, perhaps, the most popular of all, as it sounds a local alarm and signals the city fire de-



Fire alarm signalling box.

partment simultaneously. The latest designed system of this type requires no battery but at the same time is supervised and this is one of the greatest improvements ever made in the auxiliary fire alarm field. By an ingenious design of the circuit the city fire alarm battery trips the city street box in case a local box is pulled in the building protected thus doing away with one of the former greatest drawbacks to an auxiliary system especially where it was installed in a building where no electrician was available to maintain the batteries. The city circuit is not endangered in any way and as many boxes as desired can be connected to the local system without it being necessary to increase the city's battery capacity. The local alarm is given by means of vibrating bells and an annunciator indicates the location of the box pulled.

The third system is one that is designed for a large plant where a local fire department is maintained or where it is desired to have each alarm strike a code number indicating the location of the box pulled. Such a system warns the employees, calls the city fire department and by means of single stroke code signalling gongs directs each member of the local department to the fire thus making it unnecessary to run an annunciator to find out where the alarm originated from.

To cut down industrial plant fire waste, fires must be stopped at the start and one way to do this is to protect such plants with dependable auxilialized Fire

Alarm Systems and get the fire department on the job without loss of time.

Nipping the Fire in the Bud

Chemical Fire Extinguishers and Chemical Fire Engines—Deluge Sets Offer Efficient Weapon

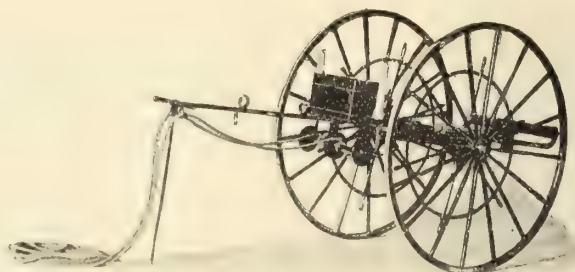
STATISTICS compiled by the Commission of Conservation of the Dominion Government, that 75 per cent. of the fires of Canada are extinguished with chemical fire extinguishers and chemical engines, and it is agreed by the best authority on modern fire protection that the 2½ gallon Underwriters labelled fire extinguisher of the carbonic acid gas type, and the chemical fire engine are the most practical types of fire protection for factory use.

Quick action being one of the most important items in fire protection, makes the chemical fire extinguisher and the chemical fire engine particularly effective, owing to the fact that they are self-contained and always ready for immediate use, so constructed that they can be handled by one person and the maximum amount of efficiency obtained in the shortest period of time. With a chemical fire engine of forty gallons capacity, the contents if so desired, can be thrown upon a fire in three minutes time and inasmuch as one gallon of chemical mixture, due to the amount of carbonic acid gas generated, is equal to forty gallons of water under pressure, the amount of fire that can be extinguished with a chemical engine in three minutes time is equal to the same amount of fire that could be put out with 1,600 gallons of water. Liberal insurance reductions in many instances are given for the installation of this type of protection.

The large factory should also be provided with outside fire protection. Mains should be so laid that effective fire streams from city water systems could

streams may be directed into the seat of the fire. Lumber yards and furniture factories, because of their combustible materials, demand the most efficient protection along this line. Individual streams are not nearly so effective as one large stream of 1½ to 2 inches in diameter as furnished by a deluge set where three lines of hose may be siamesed into one strong and powerful stream.

A watchman system should be installed in every factory with an approved labelled watchman's clock



An approved American La France Hose Cart.

so that the movements of the watchman on duty may be recorded and records kept. The watchman and the watchman's clock are very essential things for factory protection.

Asbestos a Non-burning Material

Suitable for Interior or Exterior Work-- Absolutely Fireproof, thus Affording Ample Protection

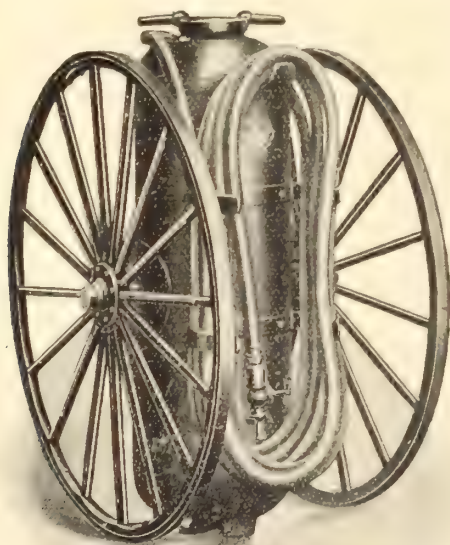
THERE are many extra hazardous points in woodworking plants that should be amply protected by some suitable fire proof material. These danger points either offer exceptional opportunities for a fire to start or when the fire is underway facilitate its rapid spread.

Asbestos has long been known as the most "unburnable" material found in nature. It not only will not burn, but its texture appearance, and physical characteristics are practically unchanged, even in fire hot enough to make iron flow like water. But asbestos is a fibre and its use for building purposes was impractical until it was combined with that other great hazard-proofing material—Portland cement.

Cement concrete is, of course, incombustible. It is as fireproof as a wall of natural rock, But until its combination with asbestos fibre, it could not be used for ordinary walls and roofs because the necessarily light, thin sheets would be too brittle to apply without breaking.

But when the tough, light asbestos fibre is mixed with the everlasting concrete, still wet, and the two are thoroughly fabricated and subjected to a pressure of several thousand pounds to the square inch, until the concrete has set with the interlaced asbestos fibre reinforcing it throughout. The result is, the practically everlasting "Asbestoslate" (asbestos cement shingles) and kindred products, asbestos building lumber, and asbestos corrugated sheeting for the exterior, also linasbestos wallboard for interior.

The storage vaults for shavings and refuse, the finishing room, storage room for oils and paints, air shafts, light wells, elevator shafts, belt holes through a floor or partition, steam pipes close to or running through a wooden partition etc., should all be covered or protected with "Linabestos" building board. This



American La France Chemical Engine.

be quickly pressed into service and volunteer fire departments should be organized in every factory. Hose carts should be provided so that hose and equipment can be quickly placed at the most advantageous points in case of fire.

Deluge sets should be provided for use of every volunteer hose company so that large and effective

board is easy to work and apply and being absolutely fire proof, offers a real protection.

To guard against fires due to outside causes, the roof should be covered with a good fire proof material, such as asbestos shingles and if the walls are subject to an exposure hazard "Asbestos" building lumber or corrugated asbestos sheathing will afford ample protection.

These materials will be found to be almost indestructible and as they do not deteriorate or require paint the cost of their upkeep is practically nil.

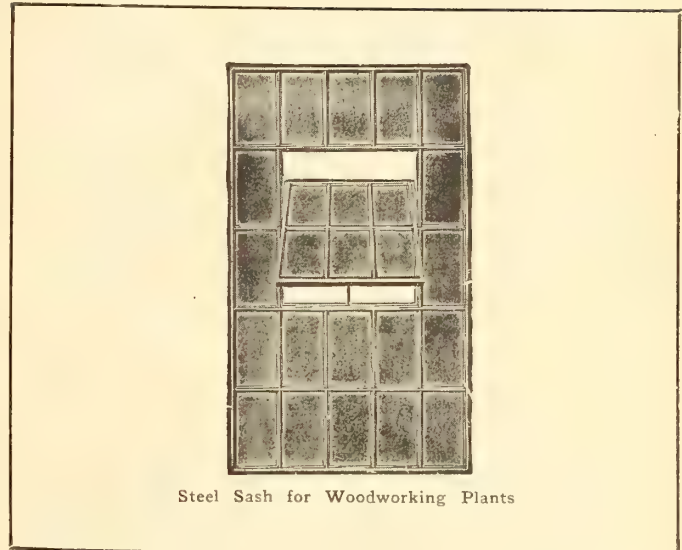
The above mentioned lines of fire proof building material are manufactured by the Asbestos Manufacturing Co., Limited, Montreal, P. Q.

Value of Fire Proof Doors and Steel Sash

Automatic Doors Confine Fire—Either Roller, Swing, Vertical or Sliding May be Used

THE ordinary woodworking factory has wooden sash on the outside. This handicaps the manufacturer in three ways: First, He has no fire protection. Second, His plant is not well lighted. Third, He is paying a higher insurance rate than he should because of these wooden sash. In the inside of his plant, he has not his different openings closed off with fire proof doors. In a great many cases he will have plenty of room for either a swinging or a sliding fire proof door; in other cases he perhaps has room for only a rolling steel door, and a rolling steel door is the most economical door made as regards space, as it will require but 2½ inches on either side of the opening and from 12 to 15 inches above the opening. All the above mentioned doors are automatic heat closing, that is he leaves his plant at night with these doors open and should a fire come, they fuse of themselves. Perhaps between his office and his factory, he desires something a little more ornamental than a tin clad door. Here he can use a kalameined tin clad door; it can be made to any design and if he desires it, it can have wired glass in the upper panel so that he gets something infinitely better than the tin clad door. On his stairways he can have a fusible link fire door which will close one floor off from another and with a fire door of this description on the stairway and rolling steel doors on the elevator shaft, a fire cannot get from one flat to another. Oily waste cans and fire bucket tanks are another means of protection; they cost little, the underwriters recognize their value and a number of these around any plant means much, in that you have a place for storing articles that might cause spontaneous combustion, by putting them in your oily waste cans and should a small blaze start, your fire bucket tanks filled with water and with the six pails inside, are always ready for service and will put out the fire before any damage can be done.

Steel sash or hollow metal windows in a factory mean first fire protection. This in itself outside of anything else is a big item. A man may be insured right up to the hilt but he loses his organization, he loses his customers and he has a nasty job on his hands to clean up any fire mess. Steel sash mean much owing to the fact that they flood a plant with daylight. While the members are light in construction, they are very strong and if the building is properly designed with steel sash, you have got every corner of your plant filled with daylight. This means much, the facts being apparent to any manufacturer. The reduction in in-



Steel Sash for Woodworking Plants

urance that he gets for putting in steel sash helps to pay for the cost of them and when the costs have been paid for, he is getting his reduction every year and they are a valuable asset to him giving him a real return every time his insurance money has to be paid out.

Local Protection May be Inadequate

Large Capacity Portable Chemical Engines—Saving in Insurance Will Pay for Equipment

WOODWORKING plants are often located in the smaller towns and outlying districts where possibly sufficient attention has not been given to providing efficient fire fighting equipment. Different types of chemical and fire engines have been evolved to meet the needs of the small community and the woodworkers so located should, for his own protection as well as for the welfare of his fellow townsmen, seize every opportunity to urge the organization of a volunteer fire department and the purchase of suitable fire fighting equipment.

The most efficient fire fighter today considering its price is the chemical fire engine. These are made in many sizes—40 gallons, 50 gallons, double cylinder 50 gallons (100 gallons in all) and 70 gallons. They are operated on exactly the same principles as are the small 3 gallon hand extinguishers, only, of course, having much better mechanical features so that the stream can be handled more advantageously than in the small type referred to. The principle feature in extinguishing fire is the use of carbonic acid gas which forms a blanket over and smothers the fire. One gallon of this chemical is equal in extinguishing power to 40 gallons of water, so that the larger sized engines as long as the stream keeps going will fight almost as big a fire as the gasoline or steam engine. In the double cylinder engine the continuous stream is the principle feature and this is obtained by re-charging one cylinder while the other is operating.

Of course, it must be recognized that chemical fire engines give maximum fire service on interior and incipient outside fires. When a fire has made headway, it is then time for water pumping apparatus to be brought into play. In this connection where a plant is situated in a town or city having waterworks, it is an easy matter to lay water mains and establish sever-

al hydrants which will ordinarily develop ample pressure, but where no water system obtains, a reservoir may be made of wood or cement with a capacity of 300 to 500 barrels of water and a gasoline fire engine of sufficient capacity to throw three good streams of water, can be secured.

An attractive and efficient motor pumping outfit, having a rotary pump of 225 gallons per minute capacity, a hose body to carry 800 or 1,000 ft. of standard 2½ in. hose and a 40-gallon chemical cylinder, is mounted on a Ford one ton truck chassis, the pump connected to the Ford motor through a special transmission. This engine will throw two splendid streams of water over a five-storey building or three streams over a four-storey roof. All of these outfits ordinarily will materially reduce the fire insurance rate, so that the savings in this connection will actually pay for the equipment usually inside of three or four year's time.

The following firms can supply reliable fire engines and equipment: The Waterous Engine Works Co., Limited, Brantford, Ont.; The American La France Fire Engine Company of Canada, Limited, Toronto, Ont.; The R. S. Bickle Co., Woodstock, Ont.; The Ontario Wind Engine & Pump Co., Limited, Toronto, Ont.; the American La France Fire Engine Company of Canada, Limited, Toronto, Ont.

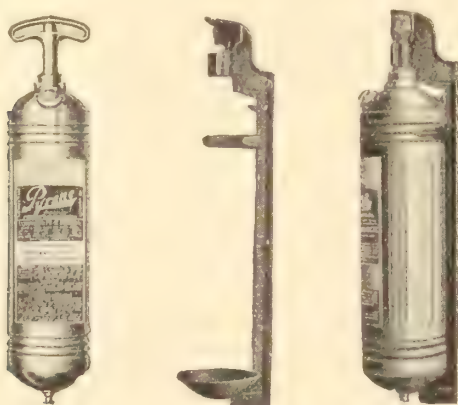
Safety in the Home and Factory

Convenient Fire Extinguisher a Good Investment—Blanketing Properties of Carbonic Acid Gas Used

IN addition to many danger points around the plant, a small, compact fire extinguisher is an urgent necessity for the stable, office, motor truck and in the home.

Some of these locations require an extinguisher that would remain operative at extremely low temperatures. A solution of this difficulty is found in Pyrene, a handy fire extinguisher that is non-freezing.

Pyrene is a combination of purely organic materials, having an aromatic odor and a high specific gravity, and contains neither acid, alkali, salts nor moisture, and will not stain the most delicate fabric or in-



Pyrene fire extinguisher and holder

jure anything with which it may come in contact. It is a liquid that does not lose its strength or deteriorate with age and will not freeze at a temperature of 50 degrees F. below zero.

When Pyrene liquid is subjected to a temperature of 200 degrees F. or over, it is immediately transformed into a heavy, dry, cohering, non-poisonous gas blanket, which surrounds the burning material, cutting off

the air supply necessary for the life of the fire, and thereby extinguishing it.

In the general use of this extinguisher the gases generated from the liquid expand in large volume. These gases are pungent to the sense of smell, but there is no toxic effect produced on the operator using the extinguisher. By the time the gases attain a sufficient volume to completely fill a room or compartment, the fire will be entirely extinguished. The gas is less suffocating than smoke, and where the gases are generated by heat without the attending smoke, they can be readily breathed and inhaled without suffocation or injurious effect.

The device in which Pyrene is used is a double acting pump, consisting of 43 separate parts, easily operated by hand, of one quart capacity, strongly built of brass and white metal throughout. Pyrene Extinguishers will throw a continuous stream to a distance of about thirty feet. The Ontario May-Oatway Fire Alarms, Limited, Toronto, are distributors for Pyrene extinguishers.

Banishing Open Flames from the Shop

Gas and Oil Flames Create Hazards—Solution Found in the Electric Glue Heater

MANY woodworkers who are using electric power, or where steam is not readily available, are forced to heat their glue with either gas or oil heaters. Of the two methods the use of gas is preferable, but even where this is used there are many objectionable fire risks.

The carrying and lighting of matches offers many opportunities for the accidental starting of fires. Where the open flame exists there is the ever present danger of a dust or fume explosion occurring, the latter when gasoline or other similar volatile liquid is used in the same department or vicinity.

The oil lamp or stove always stands a chance of being knocked over, spilling the oil and thus igniting a nasty fire, one that is difficult to extinguish. The danger of an explosion exists as well.

The electric glue heater eliminates all these fire hazards and in addition has many commendable features. As an economic proposition offering greater efficiency in the handling of glue, freedom from hot steam pipes and flame during the summer months, safety, cleanliness and lower insurance rates, it offers suggestions worthy the consideration of every manufacturer and woodworker who is interested in the heating of glues.

The R. E. T. Pringle, Limited, Toronto, whose advertisements appears in this issue, are distributors for the "International" line of electric glue heaters.

Don't Wait for Somebody to Get Hurt

Accidents are usually caused by little things, such as projecting boards with nails, pieces of upstanding glass, piles of rubbish about premises, unguarded machinery, stores that are piled carelessly and liable to fall, holes in platforms and floors, weak ladders, loose hammer-heads, sewers left open, absence of signals or other protection.

These are the things that most men walk over and around and see every day, but that they do not think to remedy until someone gets hurt or killed.

Get into the habit of watching for the little things, and the big things will take care of themselves.

Modern Piano Factory in Guelph, Ont.

**Team Work Among Employees—Thoroughness in Detail Marks All Operations
Fire Protection Not Overlooked—Operate Plant in England**

The plant of the Bell Piano & Organ Co., Ltd., is well-known to many who have passed through Guelph, Ont., as it is in full view of both the C. P. R. and the G. T. R. tracks. This concern commenced in a comparatively small way in 1864, the founder being Mr. William Bell. Today the company operates a plant embracing a floor space of upwards 100,000 sq. ft., and, when running to capacity employs some 500 workmen and has an output of 2,500 pianos, 6,000 organs, and a large quantity of benches per annum.

Export Business Increasing

The managing director of the company, Mr. H. A. Grimsdick, stated that the export trade is gradually coming back, and that in many countries, new customers are being obtained. Some of the goods in the course of production were destined for Great Britain, France, Belgium, Holland, Denmark, Norway, and for Australia, New Zealand, South Africa, South America, Rhodesia, and Nyassaland.

The key-note in the factory is high class quality of production, all the workmen being enthusiastic in their work, and making every effort to produce instruments which shall be as near perfect as human ingenuity and hands, coupled with up-to-date mechanical appliances, can make them—there is "team work" in the Bell factory from beginning to end.

The principal woods used in the casework are, walnut, mahogany, soft elm, hard maple, chestnut, spruce, whitewood and basswood. For veneers mahogany, walnut, and oak are employed. Mahogany is the finish most preferred by the public, walnut and oak following in about equal proportions. A large stock of lumber and veneers of every description is always on hand.

All the lumber entering into the manufacture of the Bell product is thoroughly seasoned before being placed in the dry kiln. In the latter it is subjected to a thorough steaming before entering the drying section, the drying being effected upon scientific lines. A special instrument is used for determining the moisture content of the air, as well as special thermometers for registering temperatures. After being removed from the kiln the lumber is allowed to stand some weeks in the drying shed, thus ensuring that the grain of the wood sets, and that the stock becomes properly cooled and acclimatized.

Equipped With Efficient Machines

From the drying shed the lumber proceeds to the breaking-out room, where swing cut-off saws cut the materials to required lengths. Formerly the ripping was done on two hand feed rip saws, but recently a No. 611 Endless Bed Edging and Jointing Saw manufactured by the Canada Machinery Corporation, Galt, Ont., was installed. The foreman of the mill room was most enthusiastic over the work performed by this machine. It not only takes the place of two saws formerly used, thus effecting a saving in power and labor, but it turns out a larger amount of work in a day's run. The work of this machine is so true and accurate that for heavy core stock the material is glued just as it leaves the saw. The men in the gluing

department claiming that the joint made on this machine is more accurate than the joint made on an ordinary jointer. For face stock, where a fine joint is required, it is, owing to the accuracy of the cut, only necessary to remove a light shaving on the jointer, thus a saving in time is effected in succeeding operations. Another additional feature is the fact that the saw operator works in absolute safety, and the lessen-



C. M. C. edging and jointing saw in Bell plant.

ing of the work on the jointer eliminates a large amount of danger from that source.

The core stock is now glued up and is handled in the usual way, a number of revolving clamps being used. Practically all the heavy material entering into the construction of the frame is made of built-up stock.

The glued-up stock is then jointed and run through the planers. For some time past a large saving in labor has been effected in the jointing operation. Previously it had been the practice to true up all the wide pieces on buzz planers, a dangerous, slow and costly method. A Herzog self-feed jointer, manufactured by the Jackson, Cochrane Co., of Kitchener, Ont., was installed to handle this work, and the results achieved have been most gratifying. The machine does the work of six men, does it with greater accuracy, saves floor space, and reduces to a minimum the danger from accidents.

The planers consist of one 48 in. Whitney, one 36 in. Whitney, and one 30 in. Cowan. From the planer the stock goes to the sander, here a three-drum "Berlin" does the work. The core stock is sanded with coarse paper while the frame material is finished with a finer grade. In view of the satisfaction this sander has given, any additional sanders that may be installed in the Bell plant will be purchased from the same firm, The P. B. Yates Machine Co., Limited, Hamilton, Ont.

In addition to the machines already mentioned, the plant consists of three buzz planers, two McGregor Gourlay 2 spindle shapers, several drum sanders,

variety saws, boring machines, one 6-in. McGregor Gourlay sticker, one self-feed belt sander, three band saws, as well as numerous smaller tools.

Veneering Carefully Handled

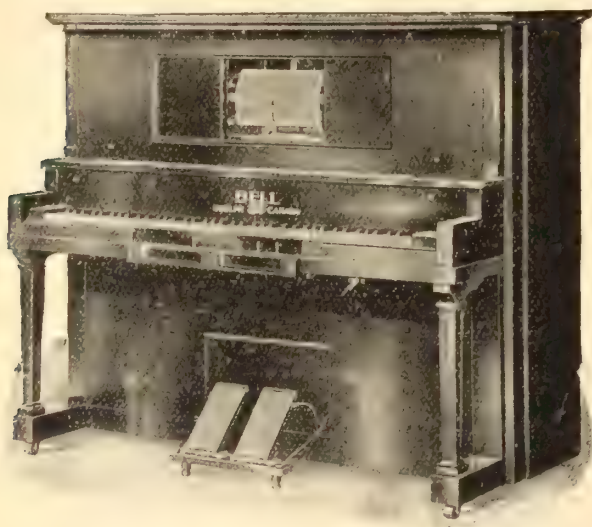
The veneer room next claims attention. Here the core stock and other pieces that have an exposed surface are carefully veneered. The equipment consists of a large cutting knife for jointing the face veneers, a glue spreader, hydraulic veneer press, a large number of retaining clamps to facilitate the removal of the stock from the press before the glue has had time to set, numerous hand presses for flat and curved work, a glue heater, and several warming closets for heating the cauls and drying the material.

The majority of the cauls are metal with an odd three-ply piece for an even. For the curved work special metal lined forms have been provided. With the use of special forms and presses a large number of irregular shaped pieces can be veneered in a day's run.

The core stock is all crossbanded before the face veneers are applied. To ensure satisfactory results, a period of at least two weeks is allowed for drying, between each gluing operation. This policy is consistently followed, wherever glue is applied, sufficient time is given to dry the joint thoroughly before proceeding with the next operation.

The veneered pieces are then trimmed and sanded, and the material is ready for finishing and assembling. Practically all the different parts are completely finished before the piano is assembled, and one cannot help but be impressed by the thoroughness and attention to detail which characterize every operation throughout the factory.

In the finishing process five coats of varnish are applied, a full week being allowed between each coat



A Bell player piano.

for the varnish to dry. The finished parts are then pumiced and polished, and in many of the styles produced, hand polishing is the final finish adopted. For the latter operation the polisher uses a very fine grade of rotten stone flour, and polishes with the bare palms of the hand. This method is without equal for securing the highest class of finish.

During the time the skeleton case is being finished, the inside portions of the piano are in course of preparation. The ribs and bridges are glued onto the sounding board, the latter being usually made of 5/16

in. spruce well seasoned and jointed. These boards are imported from the States. In view of the fact that we have so many expert woodworkers, and such large quantities of fine spruce, it is a wonder that these boards cannot be procured in Canada. If these boards were manufactured in this country, the duty and war tax would be saved, in addition to an economy in freight.

The sounding-board is now attached to the frame, or back, which has the heavy wrest plank and pin



One of the Bell line of pianos.

block attached to it. When the sounding-board has been glued on, the iron frame is attached, the pin holes bored, the tuning pine driven in, and the wires strung. The ends are then glued to the frame, the key bed is attached, and the action is installed. The actions are manufactured by the Sterling Action & Keys, Limited, Toronto, Ont.

The product now approaches the final stages, and considerable time is spent in "chipping" and tuning the instruments, each piano being specially tuned on four or five occasions, sufficient time being allowed between each tuning to enable the frame to settle to the strain imposed on it by the tension on the wires. The result is a piano which continues to enhance the high reputation enjoyed by Bell pianos.

The Bell Company has not hesitated to depart from the beaten track in the manufacture of the piano. A number of exclusive features are embodied in their instruments—in particular, the patent "Metal Tone Sustaining Frame" and the Illimitable Quick Repeating Action." The sustaining is a metal casting which replaces the wooden frame used in many pianos. It adds to the strength and appearance of the piano, and unlike wood, is not subject to change from atmospheric conditions.

The plant is well equipped with fire prevention appliances, the recommendations of the Fire Underwriters' Association having been followed wherever practicable. The fire equipment includes a complete sprinkler system, automatic fireproof doors where necessary, the entire wiring system, both lighting and power, in conduits. Fire buckets are kept at convenient location, and watchman clocks are installed in various parts of the plant to ensure that the plant is patrolled every hour during the night, by the watchman on duty.

In addition to the plant at Guelph, Ont., a piano factory is operated at Kentish Town, London, England. The English business is, during the absence from England, of the managing director, Mr. Grimsdick, under the direction of Sir Harry Foster, J.P., D.L., who is the chairman of the Bell Co.

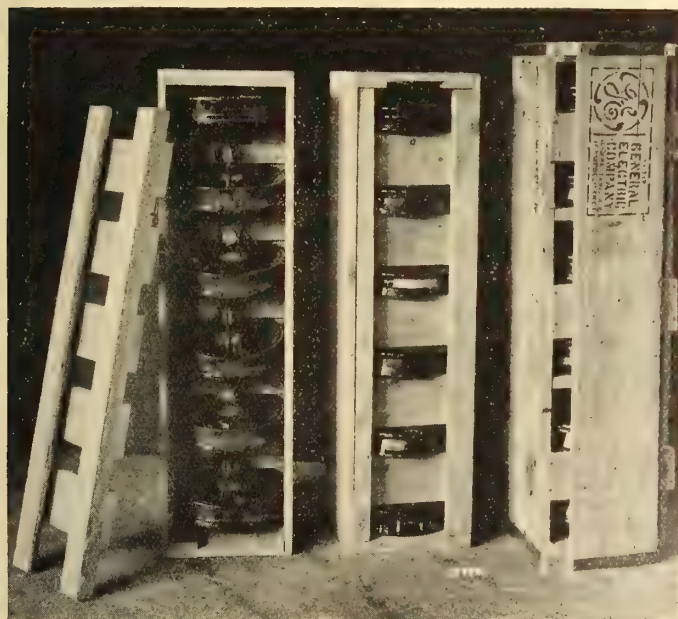
Trade News Of The Box Industry

Greater Efficiency in Box Construction

The accompanying illustration shows two boxes for shipping insulators in. The box at the right is the original container. The centre and left containers are of the final design evolved by the Forest Products Laboratory, U. S. Forest Service, Madison, Wisconsin, after a series of tests. The centre container is shown with the cover removed, and the left one with both cover and front rack removed. Front and rear are alike in construction.

The new design has the following advantages: 1. A 20 per cent saving in shipping space is accomplished. 2. It can be made entirely by machine. 3. A 15 to 20 per cent saving in lumber is made. 4. It affords superior protection to the contents during shipment.

The important feature of this box is the separators, two of which are used in each box. These separators



Box designed for shipping insulators

are constructed as shown, the short cross cleats separate the insulators longitudinally in the box and the long members of these separators are of such size that they receive and transmit the thrusts of the insulators to the edges of the box and thus prevent the insulators striking the central portions of the long faces. If the insulators strike the central portions of the long faces, the result is that the metal strapping which is used to reinforce the box cannot prevent a considerable bulging of the sides, whereas with the thrust coming at the edges as it does in this box the strapping immediately resists to its full strength any effort of the insulators to burst the box. The metal straps are not shown in this photograph but usually three or four straps are used, spaced at equal intervals throughout the length of the package.

The sides, top and bottom of this box are made of $\frac{5}{8}$ -inch pine and the ends are made of $\frac{3}{4}$ -inch pine with two inside cleats on one end and four cleats on the other end. This difference in cleating is due to the fact that on one end of the box the flange of the insulator rests against the cleats.

Grading Rules for Rotary Cut Lumber

The rotary cut box lumber is largely used in the manufacture of wirebound boxes—an industry which has grown to immense proportions within the last few years and which meets an economic necessity for a strong, light package. Gum and yellow pine are the woods principally used in the manufacture of this stock, the larger quantity being gum, for the reason that both of these woods have qualities which are best adapted for the manufacture of wirebound containers.

Recently the manufacturers of rotary cut box lumber formed an organization for dealing with the problems peculiar to this branch of the industry, which is affiliated with the American Hardwood Manufacturers' Association. This organization has made wonderful progress since its inception. Among other things, it has established grading rules and sales code.

Grading Rules March 18th, 1919

Specifications should always be furnished by buyer to manufacturers as follows:

Thickness	First
Width across grain	Second
Length with grain	Third

1. All stock shall be sound, free from rot or dote. Pin worm holes, sound tight knots, discoloration or stain no defect.

2. All stock shall be machine cut to thickness, standard gears as furnished by lathe manufacturers to be used.

3. All stock shall be cut tight, and when shipped, shall weigh not to exceed 3,100 pounds per thousand board feet if kiln dried, or 3,400 pounds per thousand board feet if air dried, railroad weights at point of shipment to govern. Stock shall be sufficiently flat to straighten under machines without splitting.

4. A trimming allowance of $\frac{1}{2}$ inch in length shall be made on all stock up to 30 inches long and 1 inch on stock longer than 30 inches, all lengths to have $\frac{1}{2}$ inch trimming allowance in width, but if not to exceed 25 per cent in any one car shall measure scant of the $\frac{1}{2}$ inch trimming allowance in widths, but full $\frac{1}{4}$ inch, same shall be considered up to specifications.

5. All cut downs in width that accumulate in cutting out defects and rounding logs to be accepted, these cut downs to run in 2-inch multiples down to 4-inch, unless otherwise agreed, but not over 25 per cent of contents of any car, footage basis, to consist of these cut downs. When sawed after drying these cut downs may be exact width, but if sized green a $\frac{1}{2}$ inch trimming allowance shall be made.

6. Checks or splits not longer than one-fourth the length of the piece are not considered defects, provided the checks or splits are reasonably straight, or do not diverge more than 2 inch per foot and do not run over $\frac{1}{2}$ inch in width on pieces 18 inches and up wide; not over $\frac{3}{8}$ inch on pieces 12 inches to 18 inches wide; not over $\frac{1}{4}$ inch on pieces 6 inches to 12 inches wide; and not over $\frac{1}{8}$ inch on pieces 6 inches and under wide.

7. Specifications on all sizes both width and length shall not be divided in fractions of less than $\frac{1}{4}$ inch.

Metal Strapping On Wooden Boxes

One of the quickest and cheapest methods of adding to the strength of a wooden box is to wrap it with thin, flat metal straps. The ability of a box to withstand the hazards of transportation may thus be increased several hundred per cent.

Tests made at the Forest Products Laboratory, Madison, Wis., for the War Department, have provided some information as to how a box should be strapped to add most to its durability. The best place to apply the strap is apparently about one-fourth of the length of the box from the end. The strapping is preferably nailed at each edge of the box to hold it in place, having, of course, been drawn snug by special tools for that purpose.

Nailing the strap in place works well on boxes made of lumber one-half inch or more in thickness, but cannot be used successfully on thinner material because the nail splits the board. On thin boxes it is necessary to join the two edges of the strap (for which purpose there are several devices), thus making a metal band around the box held in place by tension.

Depending on tension alone to keep the strap in place is, however, open to one serious objection. Unless the box is constructed of dry lumber, shrinkage reduces its circumference to such an extent that the metal strap is no longer tight. This action not only reduces the effectiveness of the strap, but commonly permits it to slip over the end of the box. A shrinkage in moisture content of 10 per cent. will permit the straps to fall off when the boxes are subjected to the ordinary hazards of transportation. A shrinkage of 5 per cent. will loosen the straps considerably, but rarely enough to permit them to fall off.

The effect of shrinkage of the box is also serious when the straps are nailed at any point, since it causes them to buckle or "festoon." The reinforcing effect

of the straps is thus diminished and the box becomes dangerous to handle. It is important, therefore, that metal strapped boxes which are to be in transit or storage for any length of time should be built of dry lumber.

Shipping Potatoes in Boxes—A Good Suggestion

A large Eastern box manufacturer has written the "Canadian Woodworker" suggesting that the box manufacturers co-operate and bring to the attention of the transportation companies and the produce dealers the many advantages accruing from the use of boxes as shipping containers for potatoes and other similar forms of produce.

He says in part: "Another thing which we think should be worked up at present when the space for export is at such a high premium, is the use of boxes, holding three bushels, for shipping potatoes instead of barrels as are used at present. Owing to the saving due to the use of boxes, the potatoes would be carried at a lower rate. The ocean freight is figured on the cb. measurement of the shipment and where barrels are used 20 per cent of the space is lost. Boxes could be piled in compact piles and thus eliminate this waste.

To bring about this change some advertising would have to be done and, in all probability, some instructive literature would have to be sent to the European Commission men. We would like to see the opinion of other box makers, on this subject, published in your valuable journal.

[The "Canadian Woodworker" invites all box manufacturers to send in their views and suggestions and to make use of our columns for the discussion of questions of interest to the box industry.—The Editor.]

Sparks and Filings in the Saw Room—No. 4

Shape and Clearance of Tooth Important—Hints on Swaging and Shaping—Care of Tools

By Edgar Usher

The shapes of band saw teeth vary considerably in different mills according, usually, to the kind of lumber being sawn, speed and feed are also considered and a good deal depending on the theories and experience of the filers. It would take more than this page to illustrate the various shapes of teeth used, some good and some bad.

Therefore the writer purposes to illustrate a few samples and point out the good and weak points in their construction. It should be said here that cracked saws are often found to result from poorly shaped teeth as well as from poor tensioning. First, it is a matter of elementary knowledge that saws must not be filed with square corners in the gullets and the avoidance of this practice must be rigid. A square edge file should never be used in the gullet of a saw and when using a file after grinding, to eliminate case hardening or for any other purpose at all, it is essential that a round file be used

Consider the Tooth on Your Saw

A more common fault to be found in a saw is a tooth without a hook and this is a fault that some filers have not yet recognized by experience, as being

the cause of many of the troubles they do not understand. A band saw tooth filed with a vertical face will not cut lumber, although it may pound its way through but its work is done by sheer force and the product is more often found to be feathery edged and crooked than of a good grading quality. This means considerable lost profit in the course of a year. It also means a loss of power and what is more important to the filer himself, it means a lot of bench work, for a tooth of this shape will throw all the weight of the cutting onto the plate and pull out the tension very quickly, as compared to a properly shaped tooth.

Illustration Number 1 shows a tooth having a vertical face and indicates another fault that is sometimes found too high a back, which causes the back of the tooth to rub constantly in the kerf, this is a very bad feature. In Number 2 is another illustration of a poor tooth, in this case the tooth "E" shows a very weak tooth and under strain or shock is liable to break off altogether or to bend over readily. Here also is seen the evil of too shallow a gullet which does not allow sufficient room for the sawdust in a large cut, with the result that the sawdust is forced to the sides and jams out between the saw plate and the sides of

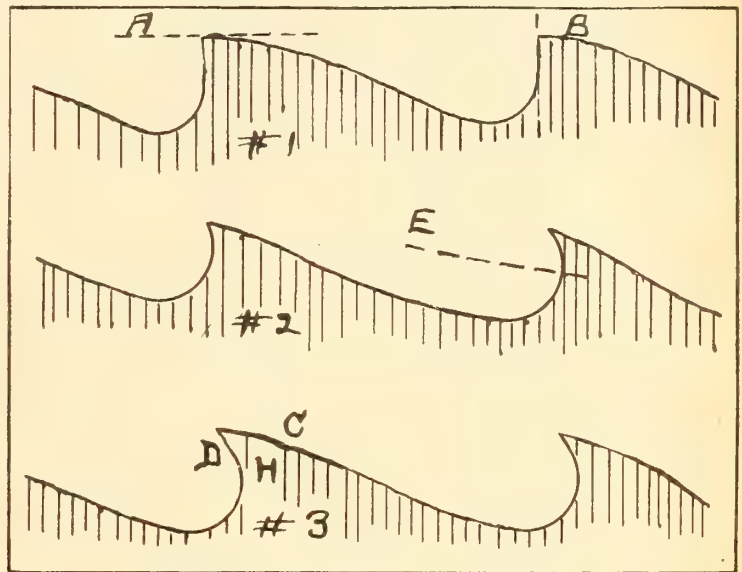
kerf, setting up friction, and thereby heating the saw, disturbing the tension and finally leaving the plate in a shape liable to develop cracks.

The Ideal Tooth Illustrated

In illustration Number 3 the ideal tooth is shown as at the point "C" plenty of clearance is given on the back and at the point "D" plenty of hook is given. This enables the saw to clear itself and run free of the cut at all times and also gives to the cutting edge a hook which ensures clean, easy cutting, eliminating "feathers" and using a minimum of power. It also shows a strength at point "H" which will enable the saw to stand up under heavy feed without dodging and also a very important feature, it gives a large free gullet which gives room for carrying out a maximum amount of sawdust without crowding so that when the tooth reaches the end of its cut the dust will fall out freely.

Feathery edged lumber is caused also by poor swaging and many filers get into trouble from this cause. In the first place too little attention is given to the swage and shapes and the anvils are allowed to become worn instead of being kept in proper shape. The result is a poorly swaged tooth. Care must be given, at all times, to these parts and all tools kept to the mark or one cannot expect to get good results. They must have constant attention and be kept ground correctly and when showing signs of being worn, new parts must be installed before trouble develops. When setting the swage up care must also be taken to avoid giving too great a spread. Some filers have found, after a good deal of trouble, that they have been spreading the points too much through use of the swage, thus fracturing the steel and giving it the appearance of split steel, as shown in illustration four. This causes the plate to open up and the corners will probably fall off. Very frequently in a case of this kind, the filer puts the blame on the steel by saying the plate is too hard or the mixture at fault and many a good saw has been sent back to the manufacturer for

hardwoods, particularly when dry, these figures can be reduced by one gauge. A saw put up in this shape will run for two or three runs without further swaging. Illustrations numbers 4, 5, 7, 9 on this page show the effect of poor swaging and shaping. The corners are rounded and the result is that instead of cutting



Showing correct shape for tooth

clean they simply tear a way through and rip the grains of the lumber, leaving them hanging, like feathers to the edge of the boards, as they leave the mill

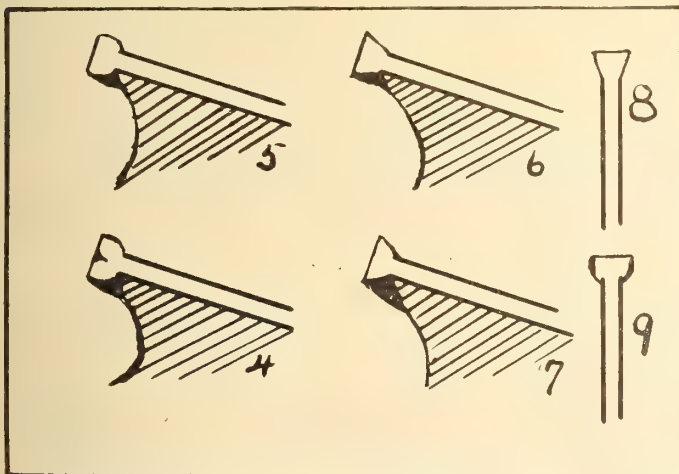
A tooth swaged too far down into the plate is shown as sketch number 7. This results in the same portion of steel being swaged repeatedly every time the saw is fitted, with the result that the molecules are mutilated and the life of the steel, in this vital part, crushed out and in consequence the corners will almost surely drop off, rough and snaky lumber will be sawn and the filing room will be a busy corner at all times. Number 9 is a sectional reproduction of improperly shaped tooth and number 8 shows the tooth properly shaped, as also does number 6.

What Constitutes a Good Swage

An ideal swage on a band saw tooth is shown on number 6. It has been spread sufficiently, without having crushed the steel molecules, to allow the shaper to bring it back to the same width as the other teeth. The points are keen and show a clearance for the plate to pass in the kerf, having about five gauges clearance which in other words means that the correct amount of swage to be carried on an eighteen gauge plate should be the equivalent of five gauges or three thirty seconds of an inch, from point to point of swage.

If filers on band mills would always give sufficient attention to the shape of their teeth and the swaging of their saws they would eliminate a lot of their troubles and many a saw would be saved from the scrap heap.

At the annual meeting of the Vancouver branch of the Engineering Institute of Canada the following officers were elected for the 1919-20 session: Chairman, E. G. Matheson; vice-president, Newton J. Kerr; secretary-treasurer, A. G. Dalzell; executive committee, Messrs. C. Brakenridge, Major W. G. Swan, D.S.O., Major G. A. Walkem and W. Anderson; ex-officio members, Messrs. R. F. Hayward and J. H. Kennedy.



Properly and improperly swaged teeth

this reason and the manufacturer made to shoulder the responsibility and as a matter of fact to replace the saw with a new one.

Heavy and Deep Swaging

The writer is of the opinion that in swaging resaws the best practice is to swage five full gauges heavier than the saw plate and bring the swage back sufficiently with the shaper to make swage of five gauges. This applies to soft wood in general and in

Upholstering and Trimming

Is French the Next Decorative Vogue?

**War Often Influences the Prevailing Styles—
French Types of Furniture in Demand—
Aggressiveness Needed to Take Ad-
vantage of Opportunity**

There is plenty of foundation for the opinion that the next prevalent style in furniture will be largely French. It has been so frequently the case in history that wars have resulted in carrying the arts of one nation to the markets of another, that it is only reasonable to expect that the arts of France, concededly the most artistic, commercially, of the nations that have been engaged, should find favor with our citizens who have been able to appreciate them by temporary association.

The furniture, the decoration, the architecture of France, that which is on view in the museums and the public buildings which our men have been permitted to see, represents historic types which are not all adaptable to our theories of taste, but there is a wealth of material, typically French, dainty, pleasing, adaptable to our tastes which will inevitably find its way here as an inspiration for the styles of the next few years.

Already furniture men tell us that the French types of furniture are meeting with renewed favor, the Regence and the Louis XVI. If this is the case, the French styles in drapery are bound to follow suit. Furthermore, we have had a surfeit of simplicity styles both in furniture and draperies, and as a relief from the simplicity styles the restrained elaboration of some of the French styles should meet with ready favor.

Recently encouragement has been given the designing of more elaborate drapery forms, because so many decorators and upholstery buyers have remarked on the lack of initiative that the simplicity types have promoted. Many a buyer has sighed for the good old days when an order for a window drapery represented a workroom transaction of no mean importance. It required a trained cutter, expert manipulation of festoons, cascades and loops, and the yardage consumed constituted a very satisfactory sales check, that is remembered in the days of simple straight-lined hangings, but seldom executed.

If French styles experience a revival, it will have to be brought about by visual promotion. When the French couturieres determine upon a style influence, whether it is short skirts, long skirts, tight skirts or voluminous skirts, they do not sit down and wait for the feminine world to make up its mind, but they bring out these styles months in advance of the time they are to be featured and worn.

They are illustrated, sketched and shown on the street and on the stage, in the salons, and the public foyers, and as a consequence when Dame Fashion orders with the idea that she is "creating a vogue," she merely follows the path along which her fancy has been led by a predetermined and persistent campaign.

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The Ruins of Textile France

Members of the textile commission that recently visited the European battle ground in order to see something of the Hun's work of destruction in textile plants have given out some interesting information. They were enabled to visit Lille, Roubaix, Tourcoing, Armetieres, Merville, Estaires, Boussieres and other districts. There was found ample proof of the wilful and wholesale damage done the machinery by the enemy during their occupation. In many cases the mills have been completely dismantled, all machinery having been removed and nothing being left but the bare walls. All machines had been stripped of brass bushings and bearings. Every yard of belting had been removed from whole regions. All warp beams containing warp and all weft had been dispatched across the Rhine. The finished goods went across long before.

All the useful tools also made the same journey and had been used, no doubt for the making of munitions. One mill had been stripped of 48,000 spindles, including frames, and these and a 550 horsepower engine were broken up into scrap metal. The textile mills everywhere through the invaded district were looted with as much persistent zeal as if the looms and spindles were gold and precious stones. There is in existence a German official order, dated as recent as August 22nd last, directing that all the jacquard design parts shall be carefully packed in numbered boxes under expert supervision. The raw material and machinery taken from Belgium alone by the Germans amounts to \$10,000,000.

Upholsterers are becoming so scarce that the Grand Rapids bureau of the United States Employment Service is issuing a call for women to learn the trade with a weekly wage of \$10 to start. Automobile manufacturers have taken many of the old upholsterers, the war absorbed most of the apprentices and the demand for workers in this line has become so urgent that this appeal for women workers is the result.

A movement has been inaugurated on the Coast aiming at the establishment of aeroplane factories in British Columbia. It is stated that such progress has been made that before long machines will likely be put on the market and exhibition flights will be a daily occurrence. They contend that the aeroplane industry will develop beyond the comprehension of the average man and woman of to-day and that B. C. must keep abreast of this development while it has the opportunity, the raw material and the skilled men.

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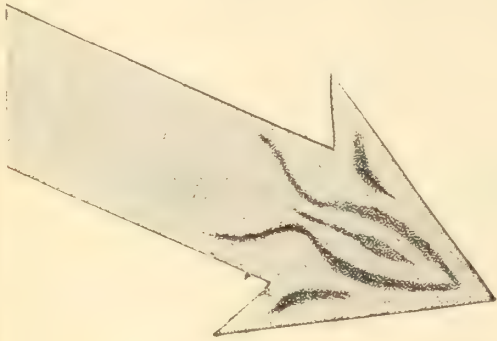
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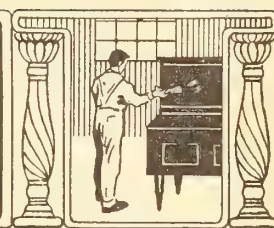
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THE FINISHING ROOM



Pertinent Points for Finishers

Interesting Facts Regarding the Use of Filler, Shellacs and Stains

By Dixy Wells

Every finisher who works for the best in production, the man who takes his work seriously and is anxious to make a success of it and of himself, should be well versed in the science of chemistry. You may think this is a long way from applying varnishes, brushing on cabinet enamels or staining mahogany, but to thoroughly understand effects, one must know the laws of cause, for there is a cause for every effect. Everything is ruled by sequence and order.

The foreman finisher, or his helper, who understands chemistry practically eliminates guess work, never takes a chance or banks on supposition. Someone has quite truthfully said that we are governed from the cradle to the grave by the laws of chemistry.

Wood finishing is a very interesting science, and depends for success upon chemical laws, and the finisher who thoroughly understands them is doubly equipped for success, but do not forget that all the information in the world without application is useless. The finest idea a man ever had would prove of no use in gaining any practical end unless that idea was fitted with means of locomotion, unless the idea was given hands with which to work, and feet with which to march to success.

Methods Developed in Recent Years

The modern type of wood finishing is only about a half century old. The old time men secured good results, and their finishes have stood the test of time. As everyone knows, however, we have made great strides in the last two decades, and workmen have come to fully appreciate the great difference in wood, and to secure special material for special purposes, as each wood requires a different treatment. The modern finisher no longer "works in the dark," but is familiar with the finishing problems that are of every day occurrence.

In chemical reactions certain staple combinations always tend to replace the unstaple ones. If two compounds are in solution, and by interchange of their component parts an insoluble substance can be produced, the interchange will take place and the new insoluble compound will precipitate. Every day of our lives this interchange takes place, and to refer to an old quotation "In the heaven above, the earth beneath and in the water under the earth."

Chemistry is perhaps our most important science and one that is, perhaps, the least understood. When reduced to a simple formula it is not hard to comprehend. In the olden times, in the days of our grandfathers, for instance, water stains were principally used. A very few colors were employed in distemper or water color, color such as sienna and umber. The variety of woods used were less than today, the popu-

lar ones being cherry and similar woods that were easy to finish.

Following this stage of the finishing game came the treatment of the harder woods. These were as a rule finished in the "natural."

In the old days oak trees, which by present day standards would be worth a great deal of money, were felled by the woodman's blade and sawed or cut into fire wood. But all this has changed—think of cutting down a walnut tree today and preparing it for the cook stove. The popular demand for oak furniture within the past fifteen years has been very great, and the finishes produced were in a variety of shades and colors—golden oak as every finisher knows meaning almost anything from a dark brown to a light yellow. However, these have been standardized to meet the popular demand. As the public soon rejected such a variety of finishes, for when they bought a golden oak dining table at one season, and perhaps the following year had saved up enough for the chairs and ordered again a "golden oak," they got something that was not even a "distant cousin" in the matter of finish, these finishes have been more or less standardized to meet the popular demand. Finishers have also made forward strides in the study of the color problems, and the best of them now can match any sample which may be sent in.

The Grade of Filler is Important

The quality of your fillers is very important, but of equal value is the manner in which you employ these fillers—a fact which should not be lost sight of. Woods which are to be finished with varnish and left either in the gloss or rubber dull should be filled, using a paste filler for the open grained woods. The filler should be well worked in and wiped off smooth. The liquid filler is employed for the close grained wood, and as this process is the very basis of the work in the finishing room, it must receive careful and intelligent attention.

In the matter of the making of paste fillers, various substances are used—the fine powdered silica probably being the best, as it fills more perfectly, and is less liable to respond to the influence of moisture. The silica filler dries hard and makes a firm foundation for the varnish coat. Pure silica even when ground to an extremely fine powder retains its natural, flint-like characteristics, and works well into the smallest pores.

Vegetable Filler Not Satisfactory

In the old days before the industry progressed to the point where minerals were employed in the making of fillers, it was customary to use cornstarch, and while this substance would fill the pores, it was vegetable matter and was subject to decay. If air and moisture could have been eliminated it would have answered very well for the filling purpose, but as this is practically impossible you will see that the results would not be satisfactory. Do not be misled by always judging a coat of varnish with a naked eye. While it may look very well with such vision, the use of a microscope

will show that the varnished surface is covered with little holes, these are formed during the last stage of drying, and are caused by the parting of the glycerides or the linseed oil which has been used—but these little holes will not be perceptible until after two or three weeks of drying.

When using your filler, provided the weather is warm or the work you are doing is in a heated room, the drying of the volatile oils which compose the main proportion of the thinner will be much more rapid than if the work was being done in cool weather or in a cold room, and for this reason it is practically impossible to determine the number of square feet one should go over with the filler before it will need "wiping" or rubbing off the surplus particles from the surface. A very safe rule, however, is to stop the application of the filler when the job in hand begins to deaden or change color, and be sure that you have everything in readiness for your wiping process as soon as the surface covered with your filler becomes flat or dead looking.

Shellac as a First Coater

The use of shellac varnish for a finishing coat is very rare, although it is sometimes employed for finishing small articles of furniture. If six or eight coats are required it can be rubbed down with pumice stone or rubbing oil and polished later, but you will see the labor involved would be too expensive.

Shellac varnish is principally employed in the furniture factory as the first coater, it being a great time saver, it dries so quickly that the following coat can be applied within a few hours. It sandpapers very well and does not gum up under this process. However, on the other hand it tends to raise the grain of the wood and requires a lot of sandpaper work, especially where done over soft woods. On resinous woods, particularly, if a coat of white enamel is to follow, shellac as a first coater is quite indispensable, as otherwise the pitch will stain the enamel and cause defects in the finished work.

One of the problems with which a finisher is confronted, and one which requires very intelligent handling is the presence of various woods in a single piece of furniture. Care in the machine or cabinet departments will result in improved work in the finishing and also effect a lower cost. You see the various pieces of wood in a certain piece of furniture may be taken,

we will say, from a number of trees, and the fact that "ash is ash" and "birch is birch," will not always afford a uniform color. One piece of birch from Ontario, and another from New Brunswick may find its way into a single table—these trees you will see, being grown in different soils, have a very different fibre and texture. On the other hand they may appear to be of one color, but when the stain is applied the grain may show entirely different from what one might be lead to expect. This point is quite important, especially in the making of fine furniture where a uniform color is necessary.

Co-operation of Machine Room Desirable

You will see that carelessness in the machine and cabinet rooms results in a great deal of unnecessary work in the finishing room, and furthermore, it often is responsible for the spoiling of an otherwise good piece of stock.

You should also be very careful in cleaning up the wood when finished. This is especially true of oak, where a clearness of finish is desired. The surface should be smooth and clean, and while of course sandpaper may be used in the beginning, the grade should be gradually reduced until, for the final work, a very fine sandpaper is employed. This works out the coarse sandpaper scratches, which if not removed might ruin the appearance of an otherwise beautiful article.

Be sure that all glue joints are perfect, otherwise, the finished piece will not be satisfactory. All joints should be made true, and where the wood is well matched the joints will not be visible after the finishing is done.

A transparent stain and a filler which will not mud up your woods should always be used in finishing mahogany, or on imitation mahogany, water stains are preferable. Oil stains are alright on oak, but you cannot get the same results with oil as you can with water when using them on mahogany. If the oil stain is used great care should be taken that the shellac does not lift the color, resulting in unevenness.

Another vital point, of course, is the use of varnishes which give "the finishing touch of perfection." They should be sufficiently elastic to stand the abuse to which ordinary furniture is subjected. The varnishes, however, should not be so elastic that "printing" will result.

Interesting Talks With the Practical Foreman

Some Practical Hints for the Foreman Finisher With Regards to Waxing, Sanding, Bleaching etc.—Some Very Good Points as to Securing Best Results Within a Short Working Period

By Donald Gordon

Some finishers have obtained very good results by thinning out prepared wax to a liquid, and then applying it with a brush. This affords quite a saving. Some say that the liquid should be applied with a pad, and after allowing to stand for a few minutes brought to a polish by a brisk rubbing. After the first application the operation can be repeated until the desired polish is attained. Of course, this sort of a method does not permit the wax to harden, as most of it goes off on the polishing pad.

The prepared wax should be thinned down to the consistency of thick cream, a condition which can be reached by stirring in a quantity of turpentine. This thin wax can be quickly and easily spread on with a

brush and should be allowed to stand over night, and then polished briskly, rubbing in the usual manner.

Some state that this method of polishing is cheaper than with others, but one coat of wax is often all that is needed, which as you will see effects a great saving in both labor and material, and produces practically the same result as an application of two or three coats by the old method.

Proper Sanding Important

In speaking of finishing, one of the most important points in good finishing rests in proper sanding, and while a great deal depends upon the condition of the article or piece to be finished as it comes from the cab-

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inet room, still a little skill in the sanding process will help in good results.

Should the lumber in the piece be thoroughly dried, smoothly planed and sanded properly, a better finish, of course, follows. We regret to note that in some cabinet rooms the foreman will argue that it is up to the finishing department to remedy defects of the cabinet making machines, which all goes back to the big importance of co-operation.

If cabinet departments thoroughly co-operate with the finishing room, having in mind the good of the whole, rather than being influenced by a desire for one reason or another to skimp their own work, the finished product is a better credit to their skill and is easier sold, and profits for the head of the firm spell progress for the individuals in the factory.

Much time can be saved through selecting and sorting woods so that they will match well, which, of course, is important, but this selection should not fall to men who are specifically engaged for other things. Great care should be exercised in their selection, however, and those manufacturers who pay attention to this point are getting good prices for their output.

Reducing Bleaching to Minimum

Splendid results can be attained by having the woods bleached before they are finished, but is this not an unnecessary use of time and money? Why not have all the woods selected beforehand, before they come into the finishing room? Of course, some bleaching is always necessary, but if care is taken beforehand in the choice of woods, net profits can be helped as a great deal of this work can be eliminated in most factories.

It is often the case that we will go into a big furniture plant, one which is ideally equipped with modern machinery, and yet we can easily sight carelessness on the part of the workman who will place trucks of sanded stock almost any place. Loaded trucks which will be placed under countershafts perhaps, where oil will drop on the wood, and disfigure them, and every finisher knows the conditions which face him in trying to use, for instance, a water stain over wood so spotted.

The forman finisher perhaps more than anyone in the plant is called upon to meet and correct troubles because where imperfect work shows in the finished product he is most liable to be held accountable, therefore he must know his business well, and refuse not only finishes below grade, but wood which he feels he cannot do the best work upon, and if taken up tactfully with the superintendent, who, of course, should be anxious for the best in results, in nine chances out of ten the matter in hand will be corrected.

Do not try to "get by" with improper work or try to shift the responsibility to another room, but stand on your knowledge and insist upon the best working conditions.

Getting Results With Stain

There is often a loss occurs from making up too much stain at one time, and fillers as well. This is often done in the finishing room, under the argument that considerable time is thereby saved. The quantities of the material are often made up and left in kegs or barrels, and whenever a finisher is in need of goods he goes to this container and fills up his pots.

Stains to do their best work should be continually stirred, for in even some of the best materials the color will precipitate, and in such cases the solution should

be heated, and oil and spirit stains of course, should be kept in steel cans.

There is many a finisher who is inclined to overdo the staining work. You will find some who believe that a perfect job cannot be accomplished unless the wood is stained three or four times. We do not feel, however that this is true. A good stain will do its work properly in one or at the most two applications. Some stains are very weak, that is, the coloring matter is not sufficient, and a weak job results, but a first class stain with plenty of coloring will do its work amply in one coat.

There are cases, however, where a particularly good job is desired and where the manufacturer receives sufficient money for the work that a two-coat staining process is permissible.

Be sure that all your stain solutions are clear. If you find this is not the case the stain probably contains some foreign substance, which has been improperly dissolved, and be sure that you test each batch on small panels before starting to finish up the furniture, which might otherwise be ruined.

Paint Manufacturers Organize Club

Manufacturers and wholesale distributors of paints, oils, varnishes, etc., met recently in Toronto and framed the by-laws and constitution for the formation of a club of all those interested in these lines in Toronto and vicinity.

It is the intention to affiliate with the National Paint, Oil and Varnish Association and strong co-operation throughout the Dominion will be sought and developed.

The officers elected for the ensuing term are: President, T. F. Monypeny; vice-president, John Anthony; secretary, H. E. Mihell; treasurer, W. W. Schoales; executive, F. J. Penberthy, W. N. Burden, A. C. Ransom.

Finishing Facts For Finishers

"Finishing Facts" is the name of a new monthly booklet issued by the Jamestown Wood Finishing Co., Jamestown, N.Y. It consists of a series of practical talks and articles for the man who has to do with finishing and finishing materials.

Have the vital facts of your own business at your finger tips at all times, and don't wear mitts, for this makes the handling of those facts awkward. Have a bookkeeping and a stock accounting system which will present you with the bare facts every day in the year. And, by the way, a bookkeeping system which doesn't prove itself every day, doesn't amount to much!

In discussing methods of spurring interests in clean manufacturing plants, home premises and communities in town and country, Insurance Commissioner and Fire Marshall James R. Young, of North Carolina, said that in some progressive manufacturing plants signs like this are used:

"This is the dirtiest place in this plant."

He suggests that factories and mills generally might use signs of this sort along with those designating the best kept sections of the plants and stir an effective pride among employees in maintaining the most cleanly conditions possible to great advantage for fire prevention, health and improvement of conditions under which the plant is operated.

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Whether you manufacture phonograph cabinets or chairs, metal filing cabinets or brass beds; whether you varnish, enamel or lacquer those products, 1 Aeron operator will do at least 4 or 5 times as much work as a brush finisher in the same time.

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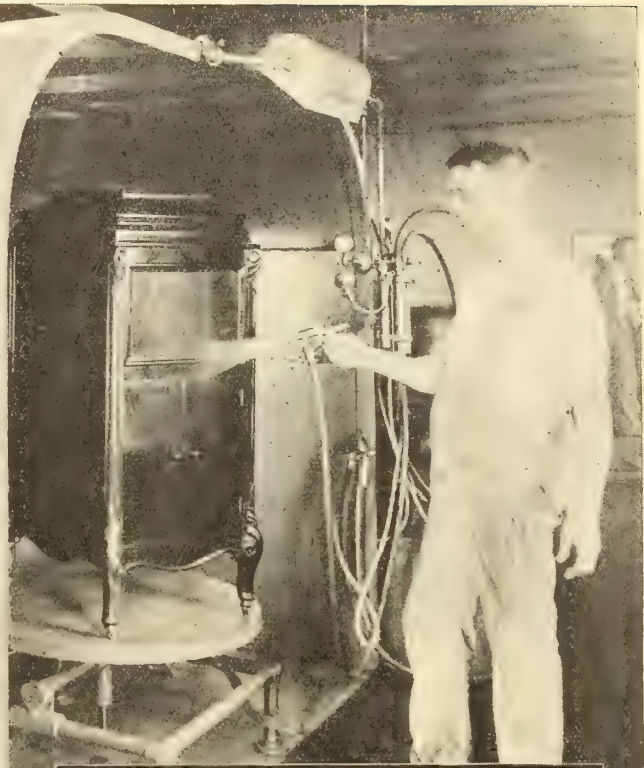
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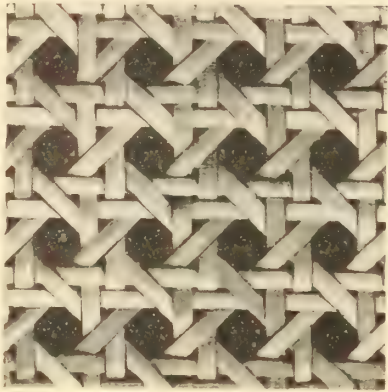
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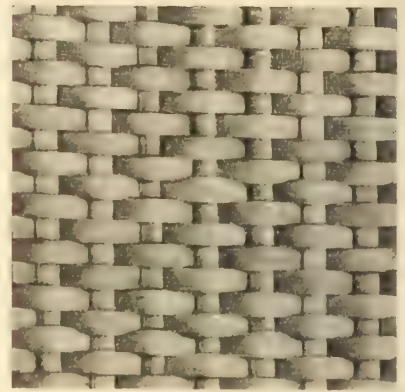
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Read your trade paper thoroughly each issue and make a reference file of it. You will often have occasion to refer to it.

Veneers AND Panels

Problems Encountered in Veneering

Carelessness a Common Fault—Sound Material for Cores—Sand Cross-banded Core Before Laying Face Veneer

By A. E. Wolfe

It might be advisable to draw your attention to the result of carelessness in preparing stock to be used in cores in veneered panels. Many woodworkers are of the opinion that any kind of material may be worked up into core stock, some look upon the making of cores as an opportunity for using up all the cull and scrap lumber that may have accumulated. This is a false theory. To obtain good results, when veneering, it is absolutely necessary that a sound foundation is provided. The core is the foundation of all veneered work.

Many manufacturers are experiencing much difficulty in their veneer rooms and are not securing the results that they would obtain were they to pay more attention to this operation. Many simple items, that would go a long way toward eliminating faulty work, are overlooked daily. Some of the troubles that confront the manufacturer who glues up veneers are the inaccurate sanding of stock, crossbanded and face, face veneers peeling, checking, blistering, open joints, etc.

Care in Choosing Material

Many of these defects would be done away with if the operator would carefully select his material, both core and crossbanding, and would pay particular attention to the machining and preparing of his stock. It must be borne in mind that rough and shakey lumber is not suitable for cores. Another mistake that is often made is using both hard and soft woods in the same core. When this is done a person may expect trouble.

Why should good sound stock and only one kind of material, either all hardwood or all softwood, be used? It enables the glue operator to prepare a suitable mixture of glue for the lumber that it is required for. If two kinds of wood are used in the same piece and a mixture of glue suitable for hardwood is prepared, this mixture will sink into the soft and porous woods, causing what is known as a starvation of glue. This will, in all probability, result in peeling at some later date. Peeling, sometimes, results when thin glue and veneer that is not absolutely dry are used in conjunction.

Blisters have been mentioned as a fault that frequently occurs. Many veneer men make a practice of allowing the glue to cool some time before putting the stock under pressure. When this is done the veneers are given an opportunity to absorb the moisture from the glue and in consequence, swelling takes place. The glue is now chilled and with the edges and ends of the face veneer well down, there is bound to be a certain amount of air between the core and the face stock. Under these conditions, the moisture in

the face veneer and air beneath it, blisters are bound to occur. Had this same core and face material been placed under pressure as soon as the glue was prepared, the result would have been far more satisfactory. Checking often occurs when this procedure is followed. Many glue operators maintain that it is best to allow the glue to stand for a sufficient length of time to allow the surplus moisture to evaporate from the glue. I am satisfied that it is not possible to get the veneer under pressure too quickly after once the glue has been applied.

Checking is not always due to moisture. In my experience I have found that there are certain stripe veneers, having a very open grain between the stripes, that will not stand the slightest moisture. One should make a consistent study of veneers and be able to recognize veneers of this kind so as to prevent the buyer from purchasing this kind of stock.

A Perfectly Flat Core Desirable

The careless preparation of core stock has been referred to. Material for cores should be well seasoned and sound. The operator at the jointer should take particular pains to ensure a perfectly square joint, this will produce a nice flat piece of finished core. If the joints should run a little off the square, the piece will come out of the clamp with a nice curve or belly in it. Do not imagine that this can be straightened by crossbanding, as many are trying to do. The best policy is to have all core stock perfectly straight and then figure that the crossbanding will keep it that way.

The toothing, scraping and sanding of the cores is an oft discussed question. It is the opinion of some manufacturers that toothing will tend to prevent peeling. When good, well seasoned material is used toothing is not necessary. If toothing gives the best results, why is it that it is not used on all glue joints? Why should we have any doubt on this point when we know that we can make good a strong joint from well seasoned material, nicely warmed and a good mixture of glue? A joint made in this way is almost unbreakable. When given sufficient time to thoroughly dry, can be swung hard on some sharp corner and it will be found that the pieces did not separate at the joint indicating that the glued joint is stronger than the wood itself.

Thickness Should Not Vary

Variation in the thickness of the different materials used in a common cause of trouble. This point is over-looked by many woodworkers. Even some, who claim to be experts do not take in consideration the fact that to have all material of an even thickness is a big factor in successful veneering. Many who find that when they attempt to run the faced panel through the sander, the face veneers are cut through in numerous spots and the corners and edges show up, will be able to overcome this feature, if they will size the core, after the crossbanding has been glued on, by dressing both sides in the drum sander. Only one

drum need be run and the coarsest grade of paper should be used. Do not blame the operator or even the machine as in the majority of cases they both are blameless.

In addition to a variation in thickness there are several other causes that might be blamed where veneers are sanded through in spots. Sometimes the sander is not running properly. The sander should be checked over at stated periods when all adjustments and repairs should be made. Many have a habit of running a machine as long as the wheels keep turning. This is a fatal mistake. Not only will a larger repair bill be run up and the machine stand idle for a greater period of time but the work produced during the latter part of its run will be of a very inferior grade. Every experienced man knows that all machinery should be kept up to a certain standard. If these minor adjustments and repairs are not attended to promptly it will soon be found that the machine is in such shape as to be beyond repairing.

When operating a sander the drums should come in for a fair amount of attention. The felt which is

not do work with the drums in this shape. Another used to cover the drums becomes worn more in some places than in others. The best machine made would be a bad fault found in some operators is that they will not apply new sandpaper as soon as the cutting qualities of the old paper have ended. It is hard to understand how anyone could expect worn sandpaper to cut.

By paying strict attention to the planer and sander and through the use of these two machines eliminate, as far as possible, all variation in the thickness of the stock used, scraping and toothing may be dispensed with.

It is hard to overcome all difference in thickness that may occur and the greater the number of plies the greater the chances of these differences occurring. Thus a five ply panel will vary more than a three ply one.

Our motto should be to try and eliminate all variation and the results that will accrue will more than repay for the trouble and time expended.

A Veneer Factory in Memphis, Tenn.

Choice Timber to Select From—Modern Appliances Used—Stock Thoroughly Graded and Dried

Situated in the heart of the hardwood forests of the United States, Niekey Brothers, Inc., Memphis, Tenn., have exceptional opportunities for selecting the most suitable logs for the manufacture of their veneers.

There is a certain amount of poor hardwood even

select the choicest, soft textured logs for flitches for veneers and saw the other logs into the regular grades of common lumber.

The logs are carried to the mill on cars. Here a large derrick lifts them off the cars and they are then sorted in the yard. This same derrick lifts the logs on a car that runs the logs into the mill, where they are cut up.

The veneer factory is modern in every respect. It is built of reinforced concrete and is, in consequence, fireproof. Here the logs are cut into rotary veneers and the flitches sliced and sawn. The equipment consists of rotary lathes, trimmers, slicers, and four Capital Veneer saws. The latter are each driven by a separate motor and are mounted on concrete foundations, running without practically any vibration.

Different methods are used in drying the veneers. A Philadelphia Textile Dryer is used for drying all



Crane used for transferring logs in yard

in their district, but they maintain a corps of specially trained men who are able to pick out the clear, even textured logs that make such desirable veneers. It is this careful selection of logs that determines the quality of the veneers and assists in the production of a uniform product.

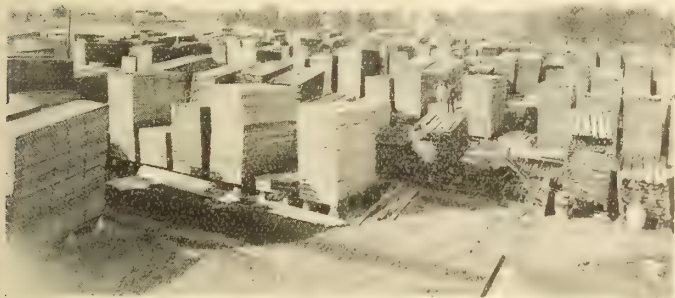
Another feature is that in cutting their own timber and manufacturing their own lumber the range of their products are increased thus enabling them to



Section of large warehouse, showing white oak veneers

veneers up to 1/15 in. in thickness. With this machine the stock comes out perfectly dry and is flat and straight. A large Coe dryer has recently been installed to handle all the rotary cut stock.

For the thicker material from 1/8 in and up, a huge tunnel dryer is being constructed. The stock is piled on sticks and dried with moist air. This is the modern, scientific method, the humidity being controlled and regulated along lines similar to those followed in the drying of ordinary lumber. When applied to oak veneers this not only insures dry material but nice flat stock as well.



View of one of the lumber yards. Note concrete piers

Some very pleasing effects have been achieved through the use of figured goods in the finishing the different offices. The private office of the manager, Roy O. Martin, is panelled in figured red gum while for that of the secretary, E. L. McLallen, sliced quartered walnut was used. The directors' room is finished in fumed quartered oak, the traffic and log department in sliced quartered gum and the general office in sawed quartered oak fumed, with furniture to match.

One of the illustrations reproduced shows a part of their large warehouse. It will be noted that the lighting is arranged to give adequate light to all parts of the building. The veneer in sight is all sawed and sliced white oak. The first bend at the right shows a nice wide run of widths for quartered white stock.

The lumber yard contains quartered white oak, quartered and plain red oak, plain red and sap gums. By examining the view of the lumber yard closely one will notice that each pile is placed on individual concrete basis. This keeps the lumber high and dry and ensures ample air circulation under the piles, enabling the lumber to dry uniformly and rapidly.

Solving the Wooden Caul Problem

We have always been partial to wooden cauls in our veneer room. A long while ago we became dissatisfied with the plain wooden ones and tried out the three-ply caul but with very indifferent success. We found that the ordinary piece of three-ply board when used as a caul and subjected to heat, pressure and rough handling soon buckled and blistered and peeled at the edges and ends, in fact, it did almost everything but split and crack.

We did a lot of experimenting to try to overcome these faults but without any marked success. We tried various grades and mixtures of glue, but varying the strength of the glue mixture did not seem to improve the cauls in the slightest. As a last resort and merely as an experiment we made a caul and put

a full layer of ordinary cotton between every ply of veneer and gave it a try. It was not long before we came to the conclusion that our difficulties had been solved. We made up a large number in this manner and have been using them for a couple of years. During this period we have been practically free from trouble with faulty cauls.

The explanation seems to be that having the cotton between the layers of wood makes a more elastic joint. One that stands both heat and bending strain. It seems to have eliminated all the tendency for warping that existed in the other three-ply cauls. In this connection I may state that we give our cauls every attention when not in use, cleaning them carefully and storing them in racks so as to keep them straight.

The Strength of Veneers

Exhaustive tests have been made by the government to ascertain the strength of veneers and a resume of results are given. The strength of all the commercial woods is well known, but in solid pieces only—not in sheets. Those who have hitherto carried out experiments to determine how strong the different woods are have had solid pieces to work with, and the thin sheets have received very little attention.

In order to make the comparison practical, yellow birch is taken as a basis of comparison, and its strength is placed at 100, the weaker woods falling below and the stronger ones going above. The following 26 woods the representative of the forests of the United States:

Wood	Strength	Wood	Strength
Yellow birch	100	Cotton gum	85
Basswood	58	Red oak	90
Cottonwood	62	Douglas fir	91
White pine	62	Cherry	93
Yellow poplar	65	Beech	94
Chestnut	65	White oak	97
Red spruce	66	Longleaf pine	101
Hemlock	70	Sugar maple	106
Sycamore	76	White ash	106
White elm	80	Black walnut	110
Red gum	80	Cork elm	110
Cypress	80	Shellbark hickory ..	120
Black gum	81	Black locust	160

It is said three-fourths of the veneers manufactured in the United States are cut from the woods represented in the foregoing list. The data on strength may not hold true for veneers in all cases, yet is probable that the comparisons given above will hold in most instances. At least, a manufacturer who wished to produce panels requiring a great strength would scarcely choose white pine, basswood and cottonwood veneers for the work, but would rather take maple oak, long leaf pine or some other that shows strong in tests on the solid wood.—Furniture Manufacturer Artisan.

English are Planning for 3,000,000 Houses

England will have to build 3,000,000 houses in the next 15 years to overcome the bad housing conditions which the government is now aiming to remedy. Steps are being taken to increase supplies of building material so that 200,000 houses a year may be erected. The aroused interest of the royal family in the housing problem is spurring activity.

Essential Features in Glue-room Work

Redrying Reduces Tendency to Warp—Veneer in Solid Piles Absorb Moisture—Rate of Shrinkage Increases as Drying Out Progresses

By J. C. Taylor

The man who would have his work stand up as it should after it leaves the glue room must begin to exercise his care on the stock to be used before it gets to the glue room, for how stock is piled and handled before gluing has quite a bearing on how it may behave after it is glued up. And one of the things we are now learning is that a common and approved practice in piling stock is the source of some of the shrinkage, warping and face checks which come to glued work after it is put up. This common and approved practice is that of tight, flat piling of veneer in the stock room and taking it from these piles for use in the glue room.

Now, I can almost hear the voice of many a man asking in some surprise and doubt, "What's the matter with the flat piling of dry veneer stock?"

Here's the matter: It takes up moisture from the air so that when you take it from the piles right into the glue room all but the top sheets, though they will show nice, flat and bright, are likely to be swollen some from absorbed moisture, though it was seemingly bone-dry when piled down. If it is, if some expansion has taken place, it means that there will be a shrinking afterward, and it is this that causes warping and face checks.

Circulation of Air Needed

We have learned some things about this by experimenting with the glued-up panels. Some of them show an inclination to warp. If we take these and pile them down in a tight pile with weights on top, they can be flattened out. But when they are taken from the pile the warping tendency manifests itself again, and the cure is to pile them down with cross-strips between, so that the air can circulate and thoroughly dry them out while they are being held straight in the pile. In this way the warping tendency can be reduced, if not cured.

Turning again to the veneer before it enters the glue room and applying the idea we get here, we can see that while the tight piling tends to keep the veneer flat, clean and bright, it also tends to keep in moisture, to prevent that thorough drying out that is necessary to complete the shrinkage before using. Right there is where originate many troubles which puzzle the glue-room man, troubles coming from shrinkage of stock after it is glued up.

"All right," you may say, "let us assume that this is the trouble, what are you going to do about it? What other method is there to follow in the care of veneer stock to be glued, other than that of flat piling?"

The best answer to this is redrying before using. No matter how dry the veneer may seem to have been when put in stock, if it has been tight piled, the way of safety against shrinkage trouble is to thoroughly redry it before using. While I hold no brief for the redrier folks, I am beginning to recognize that they have brought to the industry a better idea than most of us have realized. Entirely aside from the question raised here of moisture in tightly-piled veneer, experiments have proven that with repeated drying wood loses each time some of its tendency to swell and

shrink with changing moisture conditions. This means that if veneer is dried thoroughly, say immediately after cutting, is then allowed to take on moisture from the air and is later dried again, it will then be in better condition than immediately after the first drying, will have less tendency to swell when moisture comes its way again. That is the big and original reason for the redrier, and now we have the added reason of flat piling and the moisture from the air absorbed into these flat piles.

Give Stock Opportunity to Dry

The main point it is desired to impress and keep in mind here is, that frequently stock is taken into the glue room and used under the firm impression that it is thoroughly dry, and has shrunk to the limit, whereas it often has enough moisture in it to be slightly swollen, and that is where trouble enters.

As a general proposition, the inner part of the piles of tightly-piled stock are not dry enough to glue, no matter how well the stock may have been dried before piling. The better way to pile if it were practical, would be with cross-strips just as the glued-up panels are piled for flat drying, after being taken out of the clamps. This can be done with thick or heavy body veneer, but it is hardly practical with thin stock.

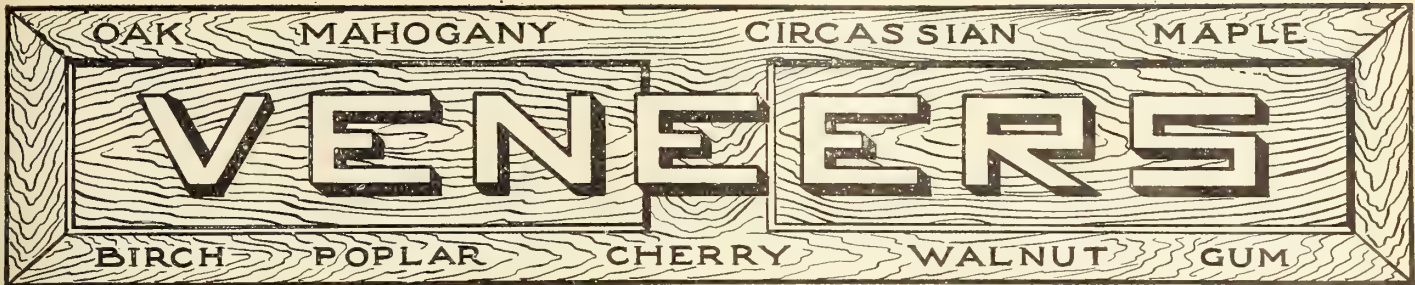
One alternative, if there is no redrier, is to hang the stock with clips and let it dry out pretty much as overhead drying of veneer is done in many places. It takes air circulation around the faces of the veneer to keep down moisture and insure dryness, and that is one of the things you can't have while stock is in tight piles.

Flat Piling is Preferable

Let us not make the mistake here of assuming from the foregoing that flat piling is objectionable generally, and should be avoided, for that is not the case. Flat piling is really the best way to keep veneer stock. It keeps it fresh, clean and flat, a thing particularly desirable with face veneer and not objectionable in any case. Also, it keeps off dust and preserves the veneer in better shape for taking glue than if it is hung up and the faces exposed. In short, flat piling is desirable, and the point is, where one is striving for the best attainment in glue-room practices, the flat piled stock needs a round of drying-out just before using. The redrier seems to be the best answer, but you can supply any answer you may prefer, just so it serves to get rid of moisture and shrink the veneer to the limit just before it is glued up.

Does all this sound like hair-splitting to you, like drawing the matter of dryness down to too fine a point? If it does it is time for you to give consideration to a well-established bit of knowledge which is too often ignored or neglected, and that is the fact that it is the last bit of moisture in wood that, when removed, causes the most shrinkage. Roundly speaking, veneer shrinks 10 per cent. in the process of drying out. Count that as shrinking 1-in. for each 10-in. of width in the face of rotary-cut stock, and you will get a more impressive mental picture of what it means. But that is only half the story, the other half being

(Continued on page 74)



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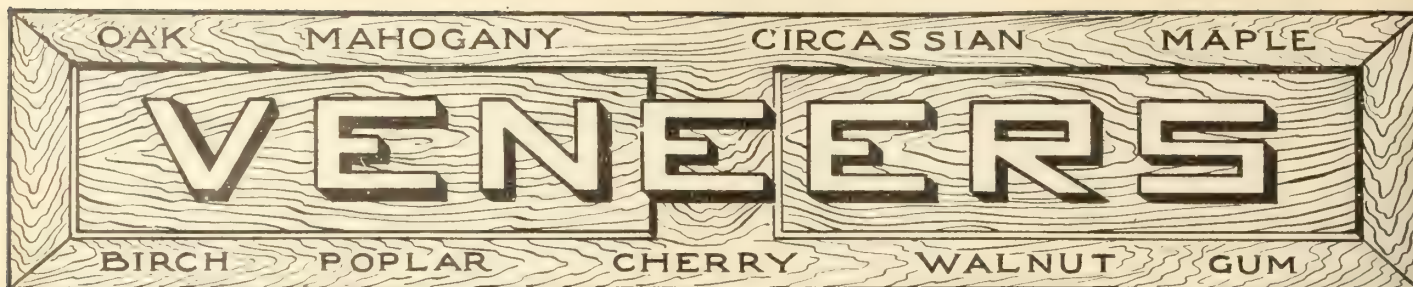
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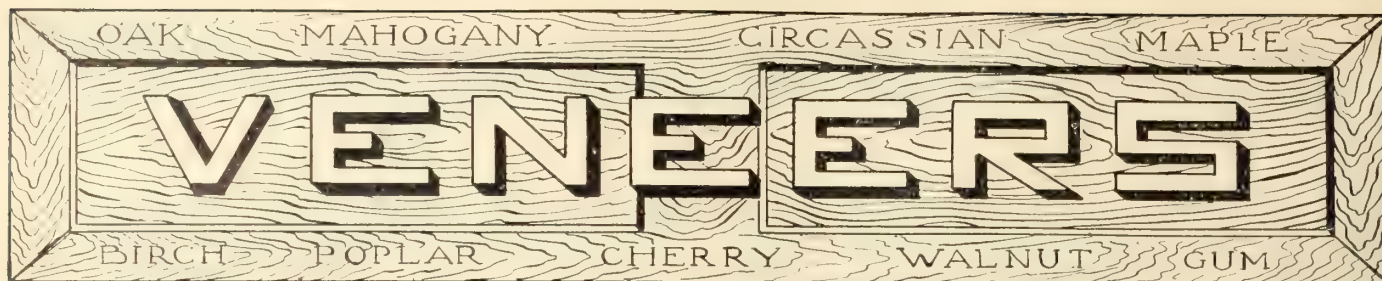
PROGRESS, NOT STAGNATION HAS MARKED OUR

half century of business life. Fifty years ago the founder of this company designed the first band mill to be used in the United States and operated it on the site of the present plant. The generations that have succeeded to the business have had before them the same ideals in progressiveness. It has been constantly a matter of family pride to leave untried no manufacturing appliance or method giving promise of improving the output. The thorough knowledge of the business which half a century ago made possible the original band mill, has literally been inherent in the generations since. That grasp of the requirements of operation has resulted in the creation of many other new ideas, most of which have remained exclusive to our own business, and each of which has its particular usefulness in maintaining a truly superior product, a product which can not be excelled in quality from any source or under any conditions. The same high type of northern grown timber which went into our de luxe veneers and lumber fifty-two years ago, is available today and will be for years to come.

HOFFMAN BROS COMPANY

FORT WAYNE INDIANA





DELIVERING THE GOODS

That is the "everyday" way of describing our service. Prompt and accurate is the manner in which your order will be filled. Choice sawed and rotary veneers, poplar crossbanding and sheet stock, Walnut butts and long wood and quartered oak veneers that are sure to please we can forward exactly as you order. Let us know your needs then leave the rest to our efficient service.

W. T. Thompson Veneer Company

Edinburgh, Indiana

U. S. A.

"The Kiln Drying of Lumber"

A Practical and Theoretical Treatise

By HARRY DONALD TIEMANN, M.E., M.F.

In charge, Section of Timber Physics and Kiln Drying Experiments of the U. S. Forest Service. Special Lecturer in Wood Technology and Forestry, University of Wisconsin. Forest Products Laboratory, Madison, Wisconsin.

About 280 pages.

The value of a technical knowledge of *kiln drying* is self evident. This book, as does no other upon the market, gives the reader the most recent and most clearly expressed information. The text and illustrations guide the way to the most efficient methods of work.

Price \$4.00

Woodworker Publishing Co., Limited

345 Adelaide Street West, Toronto

Western Office, 516 Lumber Exchange, MINNEAPOLIS, MINN.

Mills at GLADSTONE, MICHIGAN

The Northwestern Cooperage & Lumber Co., Gladstone, Mich.

THE HOME OF "PEERLESS" STANDARD BRAND PRODUCTS

Manufacturers of

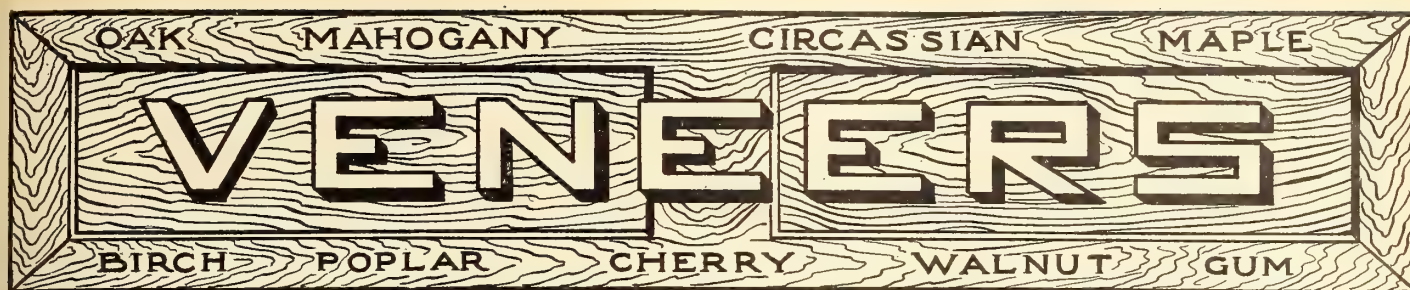
"PEERLESS" ROTARY CUT VENEERS

in Birch, Elm, Basswood, Maple, Ash and Beech for all purposes

Also hoops, liners and staves for manufacture of packages

Also "Peerless" Rock Maple, Beech and Birch flooring; Hemlock lumber; Lath, etc.

"Peerless" products are standard everywhere and you are always exercising Safety First in using them. Try us next time.
(When writing mention Canadian Woodworker)



Poplar and Walnut Veneers

We specialize in large size poplar veneers as we have extra fine poplar logs. We can cut veneer up to 10 feet square.

Our walnut veneer cannot be beat, both in plain and figured wood.

Write us for prices.

Central Veneer Company

Winter Ave. and Belt R. R., INDIANAPOLIS, IND.

Sovemanco

Southern Veneer Manufacturing Co., Inc.
LOUISVILLE, KY.

Manufacturers of all kinds
of Sawed, Sliced and
Rotary-cut

VENEERS

Carrying a large stock of
selected Mahogany,
Figured and Plain Walnut, Walnut
Butts, Sawed and Sliced Quar-
tered Oak and Sycamore and all
other native woods.

**1,000,000 Feet Quartered Red
Gum to select from**

CAN fill rotary-cut gum orders promptly

WE Respectfully solicit your inquiries

Have You a Pride in Your Product?

Aside from the dollars and cents your business brings in do you derive a certain satisfaction from the knowledge that you are manufacturing the best chair, the best bed, the best table that is on the market?

Or do you take pride in turning out more chairs, more beds, more tables than any other concern?

Whatever the case may be "BATESVILLE QUALITY" veneers will help you to maintain that standard.

They are smooth, clear and cut to an absolutely uniform thickness, saving you time, money and trouble.

AND THEY COST NO MORE.

Batesville Lumber and Veneer Co.
LAWRENCEBURG, IND.

Superior Quality Sawed Quartered White Oak Veneer

1/20" and 1/16"

is our "hobby"

And we give SPECIAL SERVICE
on L/C/L Orders

Memphis Veneer & Lumber Co.
MEMPHIS, TENN.

made up of the fact that the rate of shrinkage increases as the drying out progresses. There is practically no shrinkage of the wood till after 50 per cent. of the original green moisture content has been removed. Then the shrinkage starts in, and it gains in a sort of geometrical ratio as the moisture content removal progresses, so that when we come to the final drying out the ratio of shrinkage to moisture removed is at its greatest. Just a little bit of moisture in the veneer being brought into the glue room means a whole lot of trouble from shrinkage.

Make Certain Stock is Dry

That is the point it is desired to impress, that the final, thorough drying out, just before using, is the important thing in making glue-room work so that it will stand up and make good after it passes out and into use. Just thinking veneer is dry, or nearly enough dry that it won't matter much, is the thing many a man slips on, and afterward does a lot of puzzling over why this work went wrong and that work didn't behave as it should. The time is here now when we have to get away from guessing and just thinking things are about right. One must know positively about it, and it is to aid in getting such positive knowledge as to dryness that special testing instruments have been devised. The starting point to success in glue-room work is to know that you have the stock to be glued in the right condition before you start to work with it.

It is perhaps well to mention in passing that stock to be glued should be clean as well as dry. Dust on the face of veneer is a handicap to the proper spread and adhesion of glue, and if stock has been exposed, either by hanging up to dry or being on the top of piles, see that it is dusted off before gluing. In fact, the proper care of stock waiting to be glued should include all practical precautions to keep it clean and free from dust.—"Veneers," Indianapolis, Indiana.

Veneer Manufacturers Co. Make Changes

Owing to the steady growth of business the Veneer Manufacturers Company, Chicago, Ill., have found it advisable to increase their capital stock.

S. J. Glanton, formerly associated with the Chicago Veneer Co., has joined the managerial staff. He, together with H. P. Walsh and S. D. Rowe, will constitute the officers and directors of the company.

It is their intention to carry a complete assortment of plain, rotary cut, stock of standard thickness, in addition to a fine stock of fancy and figured veneers, at their Chicago warehouse. This will enable them to ship the material the same day the order is received.

Car load orders for plain woods are also handled expeditiously. They guarantee the quality of the lumber and are prepared to quote attractive prices.

You can spoil the draught in the chip collecting pipe by having a number of unnecessary open places.

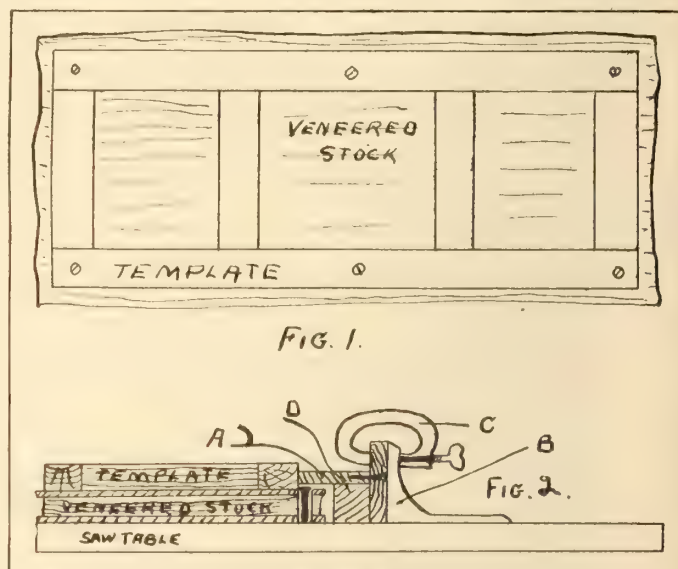
The past has given you experience. The future holds possibilities. Build upon the past, toward a brighter future, through the stern adherence to duty today.

High-pressure steam, made in a modern boiler and utilised in a fast-running compound engine, will produce power very cheaply if the waste of the mill is used to produce the steam.

Sizing Rough Edged Stock

Everyday we have to cut a large number of pieces of stock to accurate sizes. Much of this material has been crossbanded and veneered, while none of it has a true straight edge. Some of this stock ran into large sizes and to attempt to cut it up and size it in the ordinary way meant that it was necessary to perform several operations on it and to handle each piece three times. To eliminate a large amount of extra work and handling we made a number of templates, finished to the different sizes that were repaired, and fitted a special piece as illustrated, to the saw gauge. This piece enabled us to work to the template.

The first sketch shows the template on a piece of rough edged stock. It is held in place by a number of



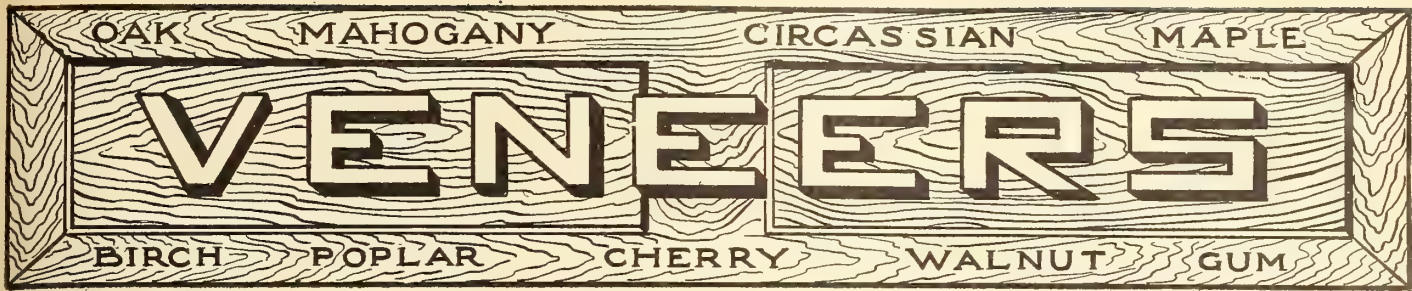
Template for sizing veneered stock

sharpened screw points which project slightly past the under side of the template. Small rubber suction cups, let in flush with the surface, could be used if the small mark made by the screw point was found to be objectionable. We find that this mark is not noticeable when the surface is filled and finished.

This second sketch shows the special piece that we fitted to the gauge, B, on the saw table. The top of this piece A, projects out even with the outside of the saw. It is fastened to the gauge by the clamp C. If a number of holes were bored in the saw gauge the piece could be fastened securely with a number of bolts or screws. The block D, is used merely to increase the solidity of piece A.

By paying attention to the shape of the saw teeth and by keeping them sharp at all times, we find that we can trim to exact length as well as rip to width and make a fine, smooth cut on both ends and sides. In use we simply place the template on the piece to be sized, taking care to see that the poorest part is cut off, by following the template around the four sides we cut the two sides and trim both ends accurately without once laying the piece down. The saving in handling is obvious and the danger to the operator, from accidental contact with the saw, is largely eliminated.

Three hundred and forty miles of extensions of railway lines in the West, as well as some new lines are to be built by the Canadian National Railways. These new constructions are chiefly for Saskatchewan.



VENEERS of QUALITY ROTARY CUT - MACHINE DRIED

The following Stock on hand ready for shipment;

WHITE OAK Sheet Stock				YELLOW PINE Sheet Stock				RED GUM Sheet Stock			
		Wide	Long			Wide	Long			Wide	Long
80,000'	1/20"	8-36"	48-104"	100,000'	1/15"	8-36"	48-140"	125,000'	1/20"	8-36"	48-104"
125,000'	1/16"	8-36"	48-104"	150,000'	1/8"	6-36"	36-104"	200,000'	1/16"	8-36"	48-104"
100,000'	1/8"	6-36"	36-104"					225,000'	1/8"	6-36"	36-104"
RED OAK Sheet Stock				SAP GUM Sheet Stock				50,000' 1/8" Fig.			
		Wide	Long			Wide	Long			Wide	Long
150,000'	1/15"	8-36"	48-104"	350,000'	1/20"	8-36"	48-104"				
175,000'	1/8"	6-36"	36-104"	400,000'	1/15"	8-36"	48-104"				
POPLAR Sheet Stock				SAP GUM Log Run				CYPRESS Sheet Stock			
		Wide	Long			Wide	Long			Wide	Long
125,000'	1/20"	8-36"	48-104"	170,000'	3/16"	6-36"	36-104"	100,000'	1/16"	8-36"	48-104"
175,000'	1/15"	8-36"	48-104"	250,000'	1/4"	6-36"	36-104"	200,000'	1/8"	6-36"	36-104"
150,000'	1/8"	6-36"	36-104"					ASH Sheet Stock			
										Wide	Long
								84,000'	1/20"	8-36"	48-104"
								76,000'	1/15"	8-36"	48-104"
								104,000'	1/8"	6-36"	36-104"

We have four million feet of dry lumber on our yard at Helena, Arkansas, ready for prompt shipment

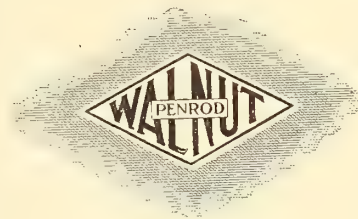
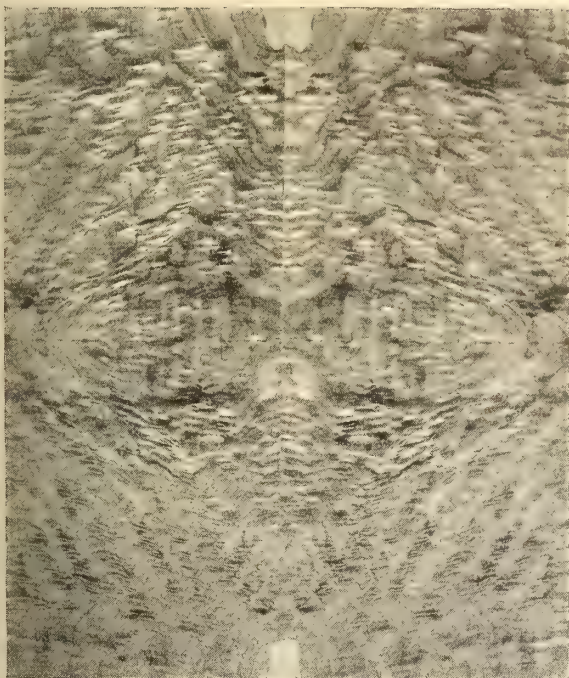
Your Orders will be given "P-J" Service

We solicit your inquiries

General Offices
Memphis, Tenn.

PENROD-JURDEN COMPANY

Mills
Penjur and Helena, Ark.



Walnut has played its part both in usefulness and beauty from the butts of rifles to the stately, beautiful furniture which has pleased so many, yet none has proven better than Penrod Walnut; its beauty and soundness will win your approval immediately. We can make prompt shipments and you are assured of a complete order of walnut that comes up to its reputation in every way.

Penrod Walnut and Veneer Co.
Kansas City, Missouri, U. S. A.

Case Goods Associations Meet

The meeting of the National Alliance of Case Goods Associations held recently in Chicago was well attended. In many respects it was one of the most interesting and most important meetings that the Association has ever held.

The questions of labor and prices were discussed very thoroughly. It was evident from all information presented, which came from several sources, that there is no probability of lumber prices being less, and every indication that it will cost more.

A smaller number of hours per week and increase in the rate per hour has a two-fold effect on cost,—first, in the increased cost of labor on the individual article; second, the increase of burden cost. The total manufacturing burden is not affected materially by the lowering of the number of hours worked, although the rate of burden per hour, or the percent of burden, must be increased to provide for the same amount of total burden.

The increased and increasing cost of lumber, labor and burdens makes it necessary to look very carefully to the cost of our goods, because any furniture sold now or later, and much that is now unshipped, will cost more than when the order was taken.

Many manufacturers reported raises of from 5 to 10 per cent. since January 1st, and others are about to raise where raises seem necessary. The secretary was instructed to have the Cost Schedule of August, 1918, brought up to date and published at the earliest possible moment. From the best information at hand it seems likely that this increase in cost schedule will be between 5 and 10 per cent.

There seems to be no question about the business available. Many factories are now refusing to take on more business, and some, on account of the uncertainty of the future and the probable increase in manufacturing cost, are now accepting orders for future shipment, subject to the price prevailing at date of shipment."

Woodenware Markets Declared to be Bare

Woodenware export prospects are rosy, according to an American opinion. There is an almost universal scarcity of products manufactured from wood, on account of the reduction of man power in Europe and the destruction of forest areas that were previously utilized in connection with this industry. Among the articles for which a demand has sprung up there are towel rollers, curtain poles, table and chair legs, woodturning products and domestic utensils. Insufficient world production to meet requirements and the likelihood that prices will stay at the levels to which they have advanced in the last three years make the outlook promising for persons who are in a position to enter export markets.

The ice company which advertised its output the year round, in order to increase the length of the season in which its customers used its goods, had the right idea. The firms which "carried on" their advertising throughout the war, even when they were over-sold, had the right idea. Don't permit yourself to be forgotten. The public has its own concerns, you know, so don't give them any excuse for a lapse of memory.

Toronto Veneer Company

Importers and Dealers in High-Grade

FOREIGN AND DOMESTIC VENEERS
MAHOGANY AND WALNUT LUMBER

1100-1104 Queen Street West., TORONTO, Canada

VENEERS

PANELS

and Service You Can Depend On

Now that we can supply our customers with Panels in 3 and 5 ply of all the popular woods, we feel that we are increasing our service to you. Panels and Veneers form a good combination and it makes your purchasing much more economical when you can get them both from the one house.

We want to give our patrons the best service we know how. Our large stock room is light and airy, where you can make your own selections or you can send in your order by mail and it will receive the same careful attention as if you were there in person.

Let us quote you our prices on Panel and Veneers before you place your next order.

Announcement

In order to meet the demands of trade, we have arranged to carry an immense stock of the plain rotary cut woods in Birch, Gum, Oak, Poplar, Yellow Pine, etc., in our large Chicago Warehouse.

This material is in standard thicknesses, desirable sizes and is available for quick shipments at reasonable prices.

We also continue to carry a large, well selected stock of choice figured and fancy woods, samples of which are at your command.

VENEER MANUFACTURING COMPANY

FULTON and MAY STS.

CHICAGO

ILLINOIS

WALNUT and Quartered **VENEERS**
White Oak

AND LUMBER

Prompt delivery

LONG-KNIGHT LUMBER COMPANY

INDIANAPOLIS, IND.



The Lumber Market

Domestic Woods

In the local lumber situation we are faced with a shortage of stock in many lines, a growing demand for export and rising prices.

The local demand has eased off slightly yet in the face of this prices have advanced on practically all lines and all indications point to still further increases. One of the chief reasons to which the decreased local business may be attributed is the present uncertainty due to the labor situation. In Montreal, where labor is more settled, we find that the movements of lumber are much brisker.

Higher prices may have a deterrent effect on the market, but by this time most lumber buyers realize that present prices are as low as can be expected for a considerable time and all should recognize the fact that the trend is for still higher prices. When the cost of living and wages in general begin to decrease it will be time enough for the buyer to look for lower prices. To-day these two items seem to be climbing steadily..

The low stocks and the shortage of logs in the different American lumbering centres effect the local situation in two ways. The Canadian manufacturer, is forced to rely to a greater extent on local production and the American lumberman is looking to our stock to help out the shortage experienced below the line. This is very marked with respect to the automobile manufacturers. They have recently bought and are shipping considerable quantities of hardwood. This stock was cut this spring and has been on the sticks only about sixty days. Three months is usually allowed for seasoning before handling this material.

The European buyers are looking for softwood deals and large quantities of hardwoods in 4/4, 6/4 and 3/4. In many cases they are paying a slight premium on present prices. This tendency will be more marked as bottoms become available in larger numbers.

The improved local market conditions on the Pacific Coast have practically put an end to the dumping of their surplus lumber on the Eastern market.

Hemlock is very firm, showing slight increases. Box lumber has advanced slightly. Pine has not shown any marked change. The different hardwoods have made the greatest advances.

The whole situation may be summed up as follows: Prices firm or advancing, stocks low, without any prospects of being increased. Dry hardwoods practically off the market. The spring cut will not be available for nearly a month, but is being bought up rapidly. The call and inquiries, especially for export, shows an exceptionally strong demand for lumber.

Imported Woods

Most of the reports emanating from the different American hard-wood centres indicate that higher prices are the rule on practically all grades of hardwoods and that the tendency is for still higher prices. The long-headed buyer who contracted for his lumber some months in advance, showed that he had a keener grasp of the situation than the lumber dealers. The

dealer finds, to his chagrin that he could realize anywhere from one to three or four dollars more on the present market than the prices prevailing some months ago when these contracts were accepted. The wise buyer is the one who will place his orders now for his needs for some time to come. Not only are prices steadily increasing, but shortly when the grain movement begins, transportation difficulties will multiply, and deliveries will be slow and uncertain.

The Hardwood Record says, editorially, that the conclusion is obvious and absolutely unavoidable, namely that while hardwood stocks are exceedingly good property now they will be far better property during the next month and six weeks and will command prices accordingly. Every element is combining to this end and the situation is being recognized by state and government agents who have been investigating price conditions. Taking Illinois as an example, the state spent a good many thousands of dollars for a thorough investigation of building materials in general and reached several very interesting conclusions among which was one exonerating lumbermen from any charge of profiteering, and another a recommendation that buyers could not expect price reductions, and therefore were not justified in holding up construction any further.

In the Memphis district heavy rains are holding up logging and retarding production. It is estimated that the production for May and June will not reach 60 per cent. of the normal output of this district. During the last few weeks quotations have advanced from \$2 to \$4 per thousand and, in some cases, are above the high war-time prices.

All hardwoods are in demand. The demand is stronger for the better grades of this material. Export buyers are in the market for large quantities in addition to that which they have already purchased.

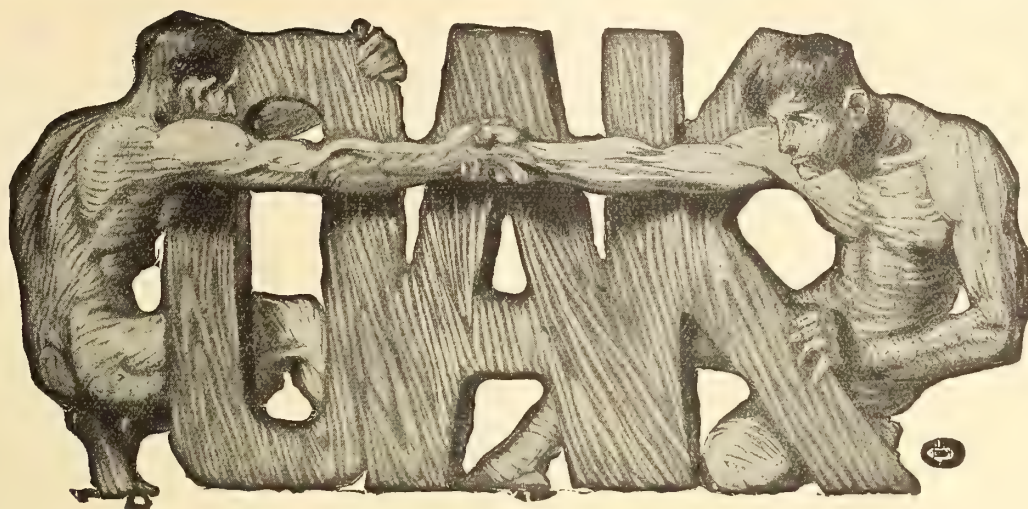
The Evansville prices continue to increase from time to time on grades that are scarce or in demand, and the present quotations are bound to advance still further. There is a strong demand for quartered white oak at good prices. Plain white, plain and quartered red oak are in good demand. Reports show that furniture and musical instrument manufacturers are the best buyers.

Louisville reports veneers and panels to be very active. Plain and quartered oak, with gum are in good demand. There is a strong demand for walnut and mahogany is specially sought after.

In summing up the situation it must be borne in mind that practically the whole world is in the market and is buying lumber. This alone, according to the law of supply and demand, should mean higher prices. Present prices are bound to be maintained for some time to come and the question really is not when will quotations drop, but how much higher are they likely to go.

A correspondent suggests that saw benches, spindles, and other machines which can be dangerous to the operative should be lighted by two electric lights, each upon a separate installation. The sawyer engaged in working a circular is in a dangerous position when the light goes out.

Sanding wheels must run at a correct speed to do proper work. Too fast a speed the paper will glaze, too slow the paper will clog up.



The Hall Mark of Quality Veneer



WRITE FOR SAMPLES
AND PRICES

THE name of Tiffany carries the idea of dependability in association with jewelry, Mayo with surgery, Marshall Field and Wanamaker with retail merchandising, Steinway with Pianos, Studebaker with Wagons—the list is long, of firms who have achieved success in the particular fields in which they have specialized.

In the production and sale of Quartered Oak the name of NICKEY BROTHERS, Inc., has become a like sign of identification of high quality Veneer. This is because the making of Veneer is our particular specialty.

Concentrate Your Purchases and Save Money

Through buying Figured Red Gum, Rotary Cut Gum and Poplar Veneer.

Sawed and Sliced Ash, Poplar and Gum Grand Piano Rims.

Sawed and Sliced Quartered Oak.

In cars with Bandsawed Hardwood Lumber.

Carload buyers get closer prices, save freight on local shipments and eliminate damaged goods.

NICKEY BROTHERS, INC.

MEMPHIS, TENNESSEE

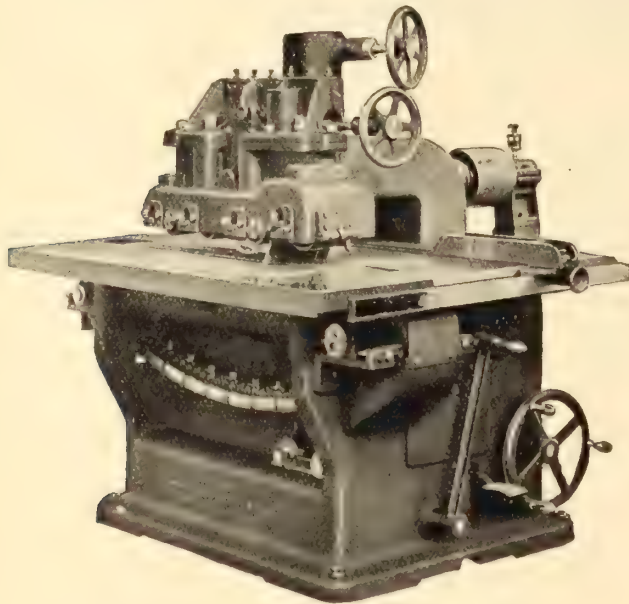
A New Ripping and Jointing Saw

Attention is directed to the New Mattison Chain-Feed, Edging, Ripping and Jointing Saw No. 207, which has just been placed on the market.

The new rip saw is identically the same in details of construction as its "big brother," the successful No. 205, with but two exceptions. It has a smaller table space between the main column and the feed-works, and a correspondingly shorter overhanging arm.

This reduction in space and material has been made to serve the plants in which the labor-saving features of the No. 205 were in great demand, but wherein the massive size of the machine could not serve its full usefulness.

The new No. 207, by combining all of the good points of the No. 205, in a considerably less bulky



Mattison No. 207 jointing and ripping saw

machine, and at a lower price, should now find a hearty welcome in these plants, where continuous rapid-fire, straight-line, ripping is a necessity.

Readers can secure further particulars and specifications by writing to the Mattison Machine Works, Rockford, Ill. One important point, which should be mentioned here, however, is the especially accurate work obtainable on this Mattison saw—insured by the ease with which the main-column, pressure-rolls and chain driving blocks are aligned, one with the other. Wherever there is liable to be wear, strain or friction, adjustments can be quickly made that will guarantee constantly perfect ripping during the entire life of the machine.

Wooden Labels and Support Sticks for Florists Imported into Canada

We have recently published reports from the Canadian Trade Commissioners in the United Kingdom to the effect that there is a great demand for woodenware in the United Kingdom and great opportunities for Canadian manufacturers of wooden articles to secure trade in that market. In connection with this we have received a letter from a well known Canadian scientific man in which he points out that wooden labels for plants used by florists and sticks for the support

of rose bushes are imported into Canada from the United Kingdom. He wonders that these articles are not made in Canada.

Running 6 x 8 Gutter on Light Machine

The "Canadian Woodworker" is in receipt of a photograph from the Piercey Supply Company, Halifax, N.S., showing a Yates No. 108 moulder running a piece of 6 in. x 8 in. Douglas fir gutter forty feet long. Mr. Piercey says that it has been generally conceded that heavy work of this kind could not be done on a moulder of this size. Their experience has been that notwithstanding the fact that there were only two cuts made in running this gutter, the machine was not effected in the least.

Not long ago this same machine was used to run 7 in. x 7 in. spruce quarter round. The quarter round was required for concrete moulds at the Halifax Ocean Terminals.

This machine is manufactured by the P. B. Yates Machine Company, Limited, Hamilton, Ontario.

Enquiring for Disappearing Roller Doors

Apple Hill, Ontario,
May 31st, 1919.

Editor, "Canadian Woodworker":

Will you please inform us where we may procure a disappearing roller door or curtain for dividing the basement of a church. The door to be made in three sections, with a small door in the centre section and to be provided with removable posts for the door to slide in. The church is about 23 feet wide and 12 feet high.

Trusting that you can furnish us with this information we are,

Sincerely yours,

A. L. McDermid & Co.

A number of firms who formerly manufactured lines of disappearing roller curtains have discontinued their manufacture and as far as we know they are not made in Canada today. Mussens, Limited, Confederation Life Building, Toronto, are agents for an American firm that makes these doors or they may be had from J. G. Wilson Mfg. Co., 3 W. 29th Street, New York. The Valley City Seating Company, Limited, Dundas, Ontario, manufacture a line of folding doors, equipped with Richards, Wilcox hangers, that they have installed in a number of churches. If a steel roller curtains were acceptable, the A. B. Ormsby Company, Limited, Toronto, can supply them.

An idea which contains constructive, practical, suggestions is a valuable thing. It may change a dead business to a live one, or make a prosperous individual out of a man on the verge of failure.

A sanding belt run over a number of wheels which can be adjusted to various positions enables a great number of odd shapes to be sanded.

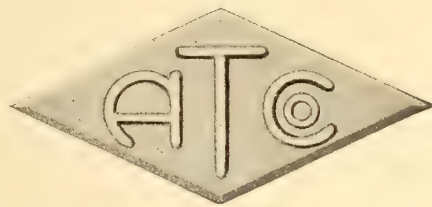
If you do not run the emery wheel the right speed you will wear it away without getting full value for your money.

Can you tell off hand which way to tilt a band saw to get the saw to run to the back of the wheel?

GUM

Figured and Quartered Stock

This Mark Means



GOLDEN RULE

Quality——Service

ANDERSON-TULLY COMPANY

Memphis, Tenn.

Exponents of Golden Rule Quality

Newsy Jottings of Interest

C. H. Cheevrier, Montreal, P.Q., cabinet maker, has been registered.

The Imperial Upholstering Co., Montreal, P.Q., was registered recently.

J. B. Petheram, Port Hope, Ont., is closing out his saw and planing mill.

A charter has been granted to the Hamilton Toy Co., Limited, Hamilton, Ont.

The Alaska Bedding Co., Montreal, P.Q., have completed an extension to their plant.

R. Emard & Co., Montreal, P.Q., shell box manufacturers, have dissolved partnership.

J. H. Lebouf & Company, Lachine, P.Q., sash and door factory, was recently registered.

It is reported that Albert Augustine has purchased the Doering trunk factory at Waterloo.

A charter was recently granted to Mills, Works and Machinery, Limited, Port Rouge, P.Q.

The partnership known as the Period Cabinet Shop, Montreal, P.Q., has been dissolved.

The Pfeffer Planing Mill Co., Stratford, Ont., are building coal bunkers at a cost of \$3,000.

J. Oliver & Sons, Limited, Ottawa, Ont., furniture manufacturers, are erecting a garage and a dry kiln.

The Wallaceburg Lumber Co., Wallaceburg, Ont., expect to commence work shortly on a planing mill.

The damage recently done to the plant of the Yale Bedding Co., Montreal, P.Q., is being rapidly repaired.

The estimated value of the furniture manufactured in Kitchener, Ont., during the year 1918, was \$2,238,000.

The Classic Phonograph Co., Limited, Breslau, Ont., are reported to have gone into liquidation. J. R. Eden, Kitchener, is liquidator.

Alterations and additions are being made to the factory of Casavants Phonograph Co., St. Hyacinthe, P.Q.

Four wooden steamers in course of construction at the Davies shipbuilding plant at Lauzon, Que., have been launched.

The Perfection Phonograph Co., Montreal, P.Q., and the Invictus Phonograph Co., Montreal, P.Q., were recently registered.

The Three Rivers Pail & Box Mfg. Co., Limited, Three Rivers, P.Q., are reported to have gone into liquidation. A. Beliveau is the liquidator.

The Brockville ratepayers have endorsed the by-law authorizing the purchase of a factory for the Ottawa Furniture Company.

O. David, J. David and E. David, Montreal, P.Q., have registered as David, Michaud & Co., to engage in the manufacture of pianos.

The residence and workshop of Peter LeBlanc, Saultnierville, N.S., was completely destroyed by fire. No insurance was carried.

The Tourville Lumber Co., Tourville, P.Q., are erecting a two-storey machine shop. Building is of frame construction, 30 x 40.

The name of the Playola Phonograph Co., Limited, Kitchener, Ont., has been changed to the Lavola Phonograph Co., Limited.

Gidley Boat Co., Limited, Toronto, Ont., has been incorporated to manufacture boats and vessels of all kinds. Capital stock \$100,000.

Ericson Aircraft, Limited, Toronto, Ont., has been incorporated to manufacture and deal in aeroplanes and automobiles. Capital \$40,000.

Incorporation papers have been granted to E. S. Stephenson & Co., Limited, St. John, N.B., to carry on the business of woodworkers.

The Restall Lumber Co., Limited, Toronto, Ont., has been incorporated to take over the business and planing mill of the Restall Lumber Co.

Smith & Stone, Limited, Toronto, Ont., have been incorporated to manufacture and deal in lumber and other wood products. Capital \$100,000.

Merlo, Merlo & Ray, Limited, Walkerville, Ont., have been incorporated to manufacture and deal in building material of all kinds. Capital \$40,000.

The Fort Erie City Council has passed a resolution offering free water and exemption from taxation for a period of years to industries locating there.

A by-law to grant a loan of \$10,000 to the Royal Broom Co., Ingersoll, Ont., for a period of ten years, was carried by a large majority at the polls recently.

The Alma R. Co., Limited, has been incorporated with head office at St. John, N.B., for the purpose of manufacturing boats and vessels. Capital \$9,000.

The Job Shipping Corporation, Limited, Montreal, P.Q., have been incorporated to build, repair and deal in ships, tugs, vessels, barges, etc. Capital \$30,000.

N. Cluff & Sons, of Seaforth, Ont., are erecting an addition to their planing mill. It is 40 x 100 feet, one storey high, on concrete foundation. Cost \$7,000.

The Spier Shipping Co., Limited, Montreal, P.Q., have been incorporated for the purpose of building and repairing ships and vessels of all kinds. Capital \$30,000.

The John Carlyle Co. has acquired the business of the late John Carlyle, 51 Hayter St., Toronto. The business will be under the supervision of Mr. James Glover.

In a small fire which broke out recently in a big block of trimmings piled on the yard of the Keewatin Lumber Company at Keewatin, the loss was about \$5,000.

The London Shipping Containers, Limited, London, Ont., have been incorporated to manufacture and deal in boxes, barrels, pails and other containers. Capital \$50,000.

The Paramount Phonograph and Record Co., Montreal, P.Q., are remodelling their factory at Papineau Ave. The expenditure will be in the neighborhood of \$5,000.

Changes have taken place in the organization of the Modern Upholstering Works, Montreal, P.Q. David Stienfield and Mrs. Abrams have registered as partners.

The town council of Brockville, Ont., is remodelling a factory building for the Office Furniture & Supplies Co., Limited. Cost of alteration approximately \$16,000.

Incorporation papers have been granted to McGibbon, Limited, Sarnia, Ont., to erect planing mills and manufacture and deal in wood products of all kinds. Capital \$100,000.

The Grand Rapids Veneer Works, Grand Rapids, Mich., have been granted an extra-provincial license to manufacture



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INTERNATIONAL TIME RECORDERS

**Are a Big Factor in Keeping Your Men
Contented**

Get as much working time as you pay for—and keep your workmen satisfied. Make each man his own time-keeper and let him operate the system himself—then he knows his time is always correct. Do it with an International Time Recorder. Put the time record in plain interchangeable printed figures to insure satisfaction at all times. Let us send full particulars.

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TORONTO - **ONTARIO**

FRANK E. MUTTON, Vice-President and General Manager.

Also Manufacturers of

Dayton Automatic Scales and Hollerith Electric Tabulators

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Which Manager Would You Sooner Be?

Before—

Disgusted and discontented employees because of mistakes in their pay envelopes—a condition which if allowed to continue often results in the loss of many valuable workmen.

After—

The employees are satisfied that their time is correct because they print it themselves in plain legible figures as they enter and leave their department in the factory. The management recognizes an equality among the employers never enjoyed before.

and deal in veneers, panels, lumber and woodwork of all kinds. The amount of capital to be used is limited to \$10,000.

Belanger & Bolduc, Limitee, Quebec, P.Q., have been incorporated to manufacture and deal in all wood products and to carry on a general lumber business. Capital \$20,000.

The Iroquois Falls Housing Co., Limited, Iroquois Falls, Ont., have been incorporated to carry on business as builders and to manufacture building material. Capital \$50,000.

The International Aerial Transport, Limited, Toronto, Ont., has been incorporated to manufacture and deal in aeroplanes, hydroplanes, carriages and other conveyances. Capital \$20,000.

The Tower Shipping Co., Limited, Montreal P.Q., have been incorporated for the purpose of building, furnishing, repairing and dealing in ships and vessels of all descriptions. Capital \$30,000.

The action by J. B. R. McLaughlin against James Davidson's Sons, of Ottawa, to recover \$10,000 commission on the sale of lumber was dismissed by Mr. Justice Kelly, of Toronto.

Incorporation papers have been granted to La Compagnie des Bois du Mond, Amos, P.Q., for the purpose of manufacturing and dealing in wood products of all kinds. Capital \$99,000.

A. D. Disilets, Sherbrooke, P.Q., has commenced the construction of a carpenter shop. Building to be 30 x 30, two storeys, and of concrete block construction. Cost, approximately \$5,000.

C. P. Fabien, 31 St. Cuneconde St., Montreal, P.Q., is desirous of securing a site for a new refrigerator factory. When the new plant is built the present factory will be turned into residences.

La Campagnie L. Gingras and Fils, Limitee, with a capital stock of \$20,000, and headquarters in Quebec City, has been incorporated to deal in timber, cordwood, and lumber and building materials.

The saw and planing mill belonging to Delphis Labelle, St. Hippolyte de Kilkenny, P.Q., was recently destroyed by fire. A large amount of lumber was lost. The amount of the damage is estimated at \$20,000.

The Canadian Snyderfiba Container Co., Limited, Montreal, P.Q., have been incorporated to manufacture and deal in timber and lumber and all articles or materials manufactured from wood. Capital \$100,000.

The Beaver-Truck Builders, Limited, Toronto, Ont., have been incorporated for the purpose of manufacturing and dealing in automobiles, trucks, aeroplanes, carriages, motor boats and yachts. Capital \$250,000.

The Snyderfiba Barrel & Box Co., Limited, Montreal, P.Q., has been incorporated to construct or purchase sawmills, factories, etc., and to manufacture and deal in wood products of all kinds. Capital \$200,000.

An extra-provincial license has been issued to the Sienon Tractor Corporation, Inc., to manufacture and deal in automobiles, trucks, motor boats and wood products of all kinds. The capital to be used is limited to \$20,000.

A slight fire occurred in the boiler room of the furniture factory of J. C. Mundell & Co., Limited, Elora, Ont. The fire was extinguished before any serious damage was done and will not interfere in any way with the operation of the plant.

The Port Hope Veneer & Lumber Co., Port Hope, Ont., are installing a veneer plant and intend to enter extensively into the manufacture of veneers and panels. The equipment will include a veneer lathe, trimmer, presses, dryers, as well as a few woodworking machines. The sawmill, situated at

Bewderley, will be operated in connection with this plant. The company have several good timber limits and will make a large quantity of crossbanding.

The "Ontario" was successfully launched by the Foundation Company recently. This is the sixth vessel to be launched under their contract with the French Government and the fifty-first to be completed by this company on the Pacific Coast.

The planing mill of William Williamson, Toronto, Ont., was recently damaged by fire. The loss is \$1,000 and is fully covered by insurance. It is thought that the fire originated outside the shavings house from a spark of a passing locomotive.

P. R. Hilborn, Galt, Ont., has bought outright the business known as the Preston Furniture Co., Preston, Ont. Mr. Hilborn has been connected with Messrs. Clare Bros. & Co., stove manufacturers, Galt, Ont. He assumed control on June 1st.

The Fraser Pulp and Lumber Co., Limited, Plaster Rock, N.B., have been incorporated to acquire the Halifax Lumber Co., Limited, the Tuskett Lumber Co., Limited, and to operate a general lumbering, woodworking, planing and sawmill business. Capital \$5,000,000.

The Brennen planing mill property in Hamilton has been sold to Wood, Alexander & James, wholesale hardware dealers, who will erect a large modern warehouse on the site. The machinery is being sold by the Dominion Lumber & Coal Company, Limited, of Hamilton.

A successful launching took place at the Foundation Company's yards in Victoria, B.C., recently, when the wooden steamer Winnipeg was sent afloat at noon. The Winnipeg is the fourth of twenty 3,000-ton wooden steamers building here by the company for the French Government, three other vessels having been launched within the past two months.

A spectacular fire destroyed the sash and door factory of Arbuthnot & Helmner, Vancouver, B. C. It was only through the strenuous efforts of the fire department that the fire was prevented from assuming serious proportions and destroying other valuable mill property. As it was several houses in the neighborhood were badly gutted. A moderate estimate places the damage at \$50,000.

Damage estimated at between \$125,000 and \$140,000 was done by fire to the plant and stock of Sayre & Holly, St. John, N.B. The fire started in the mill, in some unknown manner, and spread rapidly to other parts of the plant. The entire mill, with the exception of the power house, was destroyed. In addition, between 1,500,000 and 2,000,000 feet of lumber went up in flames. A fair amount of insurance was carried. It is stated that Sayre and Holly will immediately rebuild on the old site.

Panels, Limited, Toronto, Ont., was recently incorporated, the provisional directors being J. A. Houde, H. T. Brevitt, G. A. McElkinney. The company have secured suitable premises at 81 Portland St., Toronto, and are installing a plant to manufacture fancy and plain panels in all woods. The equipment includes a hydraulic veneer press, steam plate dryer, double cut-off saws, swing saw, three drum sander, belt sander, Perkins glue mixer and spreader. The power will be derived from an electric motor.

The Dickson Co., Ltd., Peterboro, has been incorporated with a capital stock of \$1,000,000 and headquarters in Peterboro. Wide powers are conferred upon the company, who will take over as a going concern the Dickson Co. of Peterboro, Ltd. The company is authorized to own and operate sawmills and other mills for the production of boxes, sash, doors, furniture, etc.; to manufacture and deal in lumber of

Mississippi Delta

Gum

Quartered and Plain
Red and Sap

Oak

Quartered and Plain
Red and White



The
KORN-CONKLING Co.
CINCINNATI, OHIO

Mills; Percy, Mississippi

"WELL BOUGHT IS HALF SOLD"

We Offer Following

Dry Thick Maple and Birch

Over One Year in Pile

2 cars 2" No. 1 Com. and Btr. Hard Maple

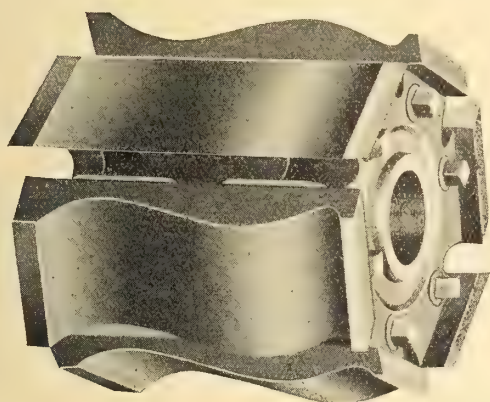
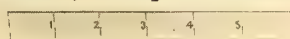
3 " 3" " " " " "

1 " 4" " " " " "

1 " 4" " " " Birch

The Diehl Adjustable Cutter Head

For Jointers, Shapers and Stickers



**National Sweeper Company Has Used Diehl
Cutter Heads for Over Six Years**
—Still Using Them

All of their moulding machines and two of their shapers are equipped with Diehl Cutter Heads. They say: "We have previously used numerous styles of heads and knives, but have found your adjustable head the most satisfactory of any."

The G. M. Diehl Machine Works
Wabash, Indiana

We also solicit your inquiries for Ash, Beech, Elm and Basswood

Canadian General Lumber Company, Limited

712 Bank of Hamilton Bldg.
TORONTO

MONTREAL OFFICE: 203 McGill Bldg.

Selling

Graves, Bigwood & Co.'s

Lumber, Lath and Box Shooks

all kinds, and to own and operate ground wood and chemical pulp plants, paper, cardboard and other mills.

According to an announcement made by Henry Boušit, the French high commissioner, in Seattle recently, the three shipyards of the Foundation Company at Victoria, B.C., Portland, Ore., and Tacoma, Wash., will be dismantled and the best of the equipment shipped to France. The balance of the plant not required will be offered at public sale. This announcement sets at rest the reports that \$200,000,000 worth of ship contracts might be let to the yards of the Foundation Company, also to the report that the Tacoma plant might be converted into a steel plant.

Montreal woodworking firms have been successful in securing work for the new Parliament buildings, Ottawa. The contract for the screens, panelling, and woodwork for the Senate has been awarded to Henry Morgan & Co., Ltd., Montreal, and the contract for similar work in the House of Commons to Mr. Geo. Roberts, Montreal. Oak is the principal wood to be used. A large amount of carving is to be done, but this will be under a separate contract. Henry Morgan & Co., Ltd., are also executing the contract for the doors and interior trim of both houses.

Giving evidence before the Royal Commission on Industrial Relations, Mr. Paul Lea, sash and door manufacturer, of Moncton, N.B., stated that he was not averse to a forty-four hour week, providing it was made interprovincial, and he favored also an interprovincial standard of wages in order to put competing manufacturers on an even footing. He had to pay his carpenters more than was paid for the same class of work done in St. John and Amherst. He would strongly favor the appointment of a body to set the price to be paid for certain classes of work.

The plant of the Wm. Cane Manufacturing Co., Limited, Newmarket, Ont., was seriously damaged by a fire and boiler explosion. Fifteen of the employees were scalded or injured by flying debris. The header of one of the large boilers blew out, demolishing part of the walls of the main building. During the confusion a fire broke out in the dry kiln, doing a large amount of damage before being brought under control. The explosion put the company's fire pump out of commission and lines were run from neighboring plants. The loss, while not estimated, will be a very heavy one.

Messrs. Rutherford, Traversy & Mathieu, manufacturers of finished lumber, interior trim, etc., recently waited on the Board of Directors of the Association of Montreal Building & Contracting Industries and asked for their co-operation in securing from the architects more details in working drawings and suggesting that the architects should furnish the list of quantities of materials required on the various jobs. It was pointed out that during the war there might have been some reason for making small scale drawings without sufficient details, but now that the country was settling down to peace conditions and more draftsmen and estimators were available there seemed no reason why the drawings should not be as clear and complete as possible. The co-operation of the board was promised.

The Seaman, Eaton Flooring Co., Limited, is being formed in Toronto, the members being W. B. Seaman, for many years with the Seaman, Kent Co., Limited, Toronto, and Marshall H. Eaton, of the same company. The new concern is making arrangements for a head office and warehouse in Toronto and have completed connections with a plant at an outside point for the production of hardwood flooring of all kinds, which will be warehoused in Toronto. It is the intention of the company to manufacture ultimately in Toronto and turn out hardwood flooring of the highest grade. W. B. Seaman, head of the organization, was the founder of the Seaman, Kent Co., and sold out his in-

terest a few months ago. Marshall H. Eaton, who has been district manager for Seaman, Kent Co. for the past two years and a half, was with the firm for six years and recently resigned to enter upon his new business relations.

The following are some of the construction programs that are on the list for 1919: Lake Huron Steel Corporation, Goderich, Ont., 1,000 houses contemplated, contract let for 5000. Hocken Lumber Co., Limited, West River, Ont., 100 houses, work under way. New Toronto Housing Commission, New Toronto, Ont., 100 houses, contract called for 54. Walkerville Land & Building Co., Limited, Walkerville, Ont., 75 houses, contract let for 37. Oshawa Housing Commission, Oshawa, Ont., 30 houses, calling for tenders. A. A. Scott and A. Brown, Leamington, Ont., 25 residences, under construction. Mayor John Stacey, Oshawa, Ont., 20 residences, under construction. Woodbridge Housing Commission, Woodbridge, Ont., 25 residences contemplated. Vancouver Housing Committee, Vancouver, B.C., 80 houses, work to commence immediately. Elmira Housing Commission, Elmira, Ont., 12 houses contemplated. Toronto Housing Commission, Ont., 18 houses under construction, large number contemplated. Many other municipalities are preparing plans for construction on a large scale.

Personal Items

Thos. Forsythe, retail lumber dealer and planing mill operator, of Beech Lane, Ont., passed away recently.

E. E. Mott has accepted the position of superintendent with the Stratford Manufacturing Co., Limited, Stratford, Ont.

Geo. M. Mason, president of the Geo. M. Mason, Limited, Ottawa, lumber and planing mills, died recently in that city.

J. C. Graham, of the Graham Sash & Door Co., Limited, Winnipeg, Man., has returned after spending four months in California. He reports a noticeable improvement in the building trades, both in California and British Columbia.

H. Hendry, master car builder of the Grand Trunk Railway, has been elected president of the Canadian Railway Club, Montreal. Mr. James Powell, who has resigned as secretary, is succeeded by Mr. W. W. Booth, of the Grand Trunk.

The death recently occurred in Baltimore of Robert H. Davies, Toronto, Ont. Mr. Davies was the youngest son of Mr. William Davies, of the William Davies Company, and was a director of the Ontario Wind, Engine and Pump Co., Limited, Toronto, Ont.

L. H. Veronneau, manager of the Simplex Floor Finishing Co., Montreal, has returned from a visit to Europe. He states that the reconstruction of the destroyed areas has not yet made any great progress. Mr. Veronneau, however, thinks that work will soon be commenced in earnest. He proposes to again visit England, particularly in connection with an exhibition at Newcastle-on-Tyne, when he will show a number of floor finishing appliances and samples of lumber which have been finished by the company's methods.

H. A. Grimsdick, managing director of the Bell Piano & Organ Co., Limited, Guelph, is leaving shortly on a business trip through the Western Provinces. Mr. Grimsdick will proceed as far as Victoria, B.C., visiting en route Winnipeg, Saskatoon, Calgary, Vancouver, and many other of the Western cities. Upon his return from the Pacific Coast, Mr. Grimsdick hopes to make a flying visit to London, England, in connection with important developments which the Bell Company has in sight, and which should result in an even greater expansion of business than has hitherto taken place.

Is Your Factory Fireproof?

Most fires start inside the buildings. Protect your interior with **LINASBESTOS**—an absolutely fireproof wall-board which has none of the disadvantages of ordinary wallboards.

ASBESTOS SLATE. The ideal fireproof exterior siding and roofing material. Frost proof and weather proof. Actually improves with age.

ASBESTOS LUMBER. The fireproof building material for outdoor construction, cheaper because it lasts longer.

Send for catalogue and further information



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Subscribers' Information Form

Many letters reach us from subscribers enquiring where a certain machine, a certain kind of lumber or veneer, or some other class of goods, can be obtained. We can usually supply the information. We want to be of service to our subscribers in this way, and we desire to encourage requests for such information. Make use of this form for the purpose.

Date.....191

CANADIAN WOODWORKER
AND FURNITURE MANUFACTURER,
345 Adelaide Street West, Toronto.

Please tell us where we can procure

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Address

FOR SALE

Berlin Double Surfer, No. 177.
 Berlin No. 88 Hardwood Matcher.
 Berlin No. 90 High Speed Matcher.
 Berlin No. 401 42-in. Drum Sander.
 Mershon 44 in. Band Rip Saw.
 Box 61, Canadian Woodworker. 6-7

FOR SALE

A few carloads of Spruce Crating $\frac{5}{8}$ " and 1" x 2", 3" and 4" wide, in random lengths.

Stadacona Box Company,
 4-7 164 Grant St., Quebec, Que.

FOR SALE

Two storey Brick Factory Building with or without power and machinery; also Dry Kiln and store house, located on large lot convenient to two railways. Particulars on application. Address Box 949, Owen Sound, Ont. t.f.

FOR SALE

1 Yates No. 421 Six Drum Sander.
 1 Morgan No. 1 Setting Up Machine.
 1 Morgan Trimming Machine.
 1 Jackson-Cochrane Resaw.
 1 Air Tank, 36 in. x 96 in.
 13 Veneer Presses.
 50 Carloads B. C. Spruce, well seasoned.
 Vises, Electric Drills, Soldering Stoves, Wooden Trestles, etc.

Let us quote you on your requirements.

Curtiss Aeroplanes & Motors, Limited,
 163 Dufferin Street,
 6-7 Toronto, Ont.

How Many Hours Did it Cost?

A worker in an industrial plant who had been unusually successful in saving and maintaining his family and himself in comfort at the same time, gave this explanation of how he got ahead.

"As long as I thought of prices of things merely in money, I never could save a cent, and we had very little to show for what we spent. In terms of money, anything I wanted seemed cheap.

"One day when I was going to spend a dollar foolishly, the question occurred to me, 'How many hours of good hard work did it take me to earn that dollar?' The article no longer seemed desirable and I quickly realized that at the price of two hours' work it was not cheap. Since then I have trained myself to translate prices into working time. Ten cents is 12 minutes at the mill; \$5 means a day and overtime.

"If you use this system you will be surprised to find how many things you

can do without easily and how many other things are not worth the money to you. Even better pricing things in hours of work helps you to get real solid value for every cent you spend. I believe thoroughly that amusement and recreation are necessary to efficiency. But now before we spend for shows or what not, we decide whether the recreation or amusement contemplated would be worth the work it took to earn that fun.

"As a result many a 'foolish' quarter and dollar have gone into Thrift and War-Savings Stamps, which certainly pay you full time for your work. We regard the interest as 'overtime velvet.' Besides, we have a better home, better clothes, better furnishings, better food, and more fun than we did before I began to spend wisely."

Pep in Business

"PEP" consists largely of PUSH. It's the man of "PEP" who gets busy and works out to conclusion some plan which for years has been germinating in the mind of the dilatory man.

How many times have you heard it said, "Well, to think that such and such scored a hit—I was just about to launch that scheme myself." Or, "What a simple device—strange someone didn't think of that long ago."

The men who, years back, built railroads through fields and forests, over swamps and deserts;—the men who, when the country was in knee-pants, saw great agricultural opportunities in the west and in the south; the men who acquired the most valuable real estate in every metropolis; the men who established merchandise stores in desirable centres in their respective towns; the men who got in on the ground floor of the "movie" business—they were men of ACTION.

Little things count in business as in life in general. Vast deserts are made up of tiny grains of sand; towering mountains are composed of minute granules solidified into one gigantic mass. So big successes are merely a series of little successes; of little things well done; of minor responsibilities carefully dispatched; of miniature plans conscientiously executed.

When asked the secret of his great success, Cyrus Curtis replied, "I do the little things well."

Another big business-builder asserts, "Do the little things well, and the big things will take care of themselves." And they will.

A million routes lead to infinite success—it matters little which you choose, just so you "arrive."

FOR SALE

Battery of "Bowser" Tanks for Finish Room. Good Condition.

t.f. Box 32, Canadian Woodworker

PETRIE'S LIST

of NEW and USED
WOOD TOOLS
 FOR IMMEDIATE DELIVERY

Wood Lathes

20" Sidney, "Famous."
 16" Canada Machinery Corporation.
 16" Cowan.
 16" Sidney, "Famous."
 14" Sidney, "Famous."

Wood Planers

30" Whitney pattern surfacer.
 26" double surfacer.
 24" Champion planer and matchers, moulding attachment (2).
 24" Galt, planer and matcher.
 24" Hermance, double surfacer.
 24" MacGregor-Gourlay.
 24" Sidney, "Famous," single surfacer.
 18" Sidney, Famous.
 12" Perfection, buzz.
 12" Petrie special, buzz (6).

Band Saws

36" MacGregor-Gourlay, circular, re-saw.
 36" West Side, pedestal.
 30" Cowan, bracket.
 30" Goldie & McCulloch, bracket.
 27" Sidney, "Famous," pedestal.
 20" Crescent, pedestal.
 20" Sidney, Famous, pedestal.

Saw Tables

No. 2 Famous, variety.
 No. 2 Crescent, boring attachment.
 Galt, iron frame, cut off.
 MacGregor Gourlay railway cut-off.
 Greenlee automatic cross-cut.
 7' Fay & Egan, swing saw.
 7' Williams, swing saw.
 Canadian, steel frame, pole saw.
 Vaughan, portable, drag saw.
 Champion, portable drag saw.

Mortisers

Cowan, upright, power.
 Fay, upright, power, boring attachment.
 Galt upright, compound table.
 MacGregor Gourlay, upright.
 No. 5 New Britain, chain.
 No. 1 Smart, foot power.
 No. 2 Osborne, foot power.

Moulders

13" Clark-Demill four-side.
 12" Cowan four side.
 12" Woods four-side, inside.
 10" Houston four side.
 8" Dundas four-side.
 6" Dundas sash sticker.

Clothespin Machinery

Humphrey automatic lathes (5)
 Humphrey double slotters (3)

Miscellaneous

No. 30 Famous, universal woodworker.
 Fay, horizontal, boring machine.
 Nos. 7 and 8 Sidney, post boring machines
 No. 920 C. M. C., post boring machine.
 No. 2 Defiance, belt sander.
 Fay & Egan 12 spindle dovetailer.
 MacGregor Gourlay 12 spindle dovetailer.
 Hall's automatic shingle machine.
 Waterous lath machine.
 26" Dominion lath trimmer.
 6" Linderman, automatic, glue jointer.
 No. 3 Defiance, rim & fellow rounder.
 No. 1 Defiance, axle shaper.
 No. 1 Defiance, spoke driver.

Ask to see our large stock of used supplies—belting, pulleys, machine shop equipment, mill supplies, pipe and fittings. This material is as good as new, and can be bought at greatly reduced prices.

H. W. PETRIE, LTD.
 Front St. W., Toronto, Ont.

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“FLINT” Service

We know that the furniture manufacturer is faced every day with varnish problems that require technical service and advice and to that end we have perfected a service department that we are sure can be of immense assistance to you in your particular line.

Our service men know the varnish business thoroughly and take a personal interest in any problems that you may be pleased to submit.

Our varnish plant in Toronto is the largest and most modernly equipped in the Dominion and fully equipped to take care of your every need.

Get in touch with us

The Flint Varnish and Color Works
of Canada Limited

63 Bay St.

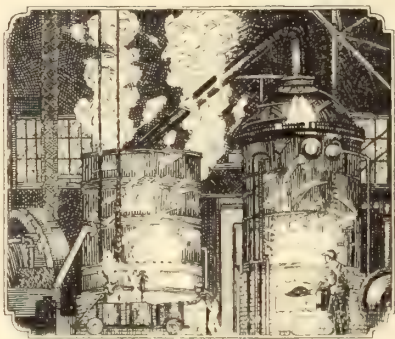


TORONTO



Wood Turpentine

(MADE IN CANADA)



THE Canadian Wood Turpentine—made at our mills at La Tuque, P.Q., is an excellent diluent and solvent and contains no free rosin.

This Turpentine is made by an improved laboratory process from Canadian woods and its distinctive odor clearly indicates that it is a different product from that given by the older methods of distillation.

Further and complete information gladly sent upon request.



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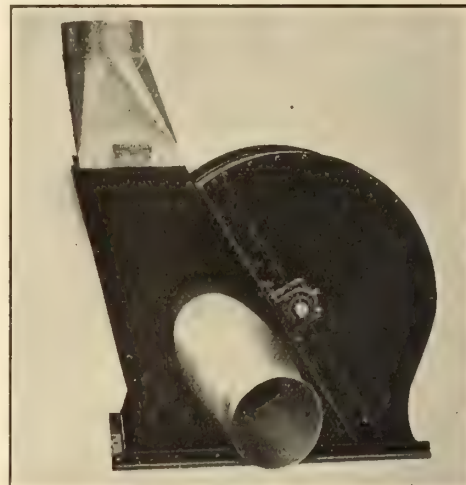
56 St. Peter Street
Quebec, P.Q.

Prevention is Protection

Minimize the Risk of Fire
by

Freeing Your Factory of Inflammable Materials

and Feeding Same Under Boilers with
our Automatic Furnace Feeders



Patented
Side view of 30 inch blower showing inlet and
upright discharge duct.

The "Foster" Fan is the only non-centre suction fan in existence, having a segmental opening to the rear and under side immediately adjacent to the discharge duct, which allows the material entering the fan to be discharged without passing through or around the wheel.

We manufacture Blowers and Blower Systems complete and supply capable and efficient mechanics to install them most scientifically, and will send an expert engineer of extended experience to estimate on cost of installation of Exhaust Systems.

We can supply you with testimonials from Canada's largest manufacturers.

TORONTO BLOWER CO.

156 Duke Street

- TORONTO



Completely Standardized on Belting

ONE of the greatest compliments ever paid Goodyear Extra Power Belting comes to us from Port Arthur, Ont. In May, 1918, the big plant of the Port Arthur Pulp & Paper Company was opened. In six months they had decided to use nothing but Goodyear Extra Power Belts on their Mill machinery.

This decision was not made in a moment. Extra Power received as severe a testing as was ever given belting.

From barkers and grinders, down to cutters and pumps, "Extra Power" was submitted to all the gruelling work and difficult conditions that a pulp and paper plant affords.

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To decide, therefore, to standardize on Extra Power Belting, in view of the "very good service" it has given, is a splendid tribute to its dependability and all-round merits.

These time and money-saving features of "Extra Power" are winning for this modern belt a dominant place in Canadian industry.

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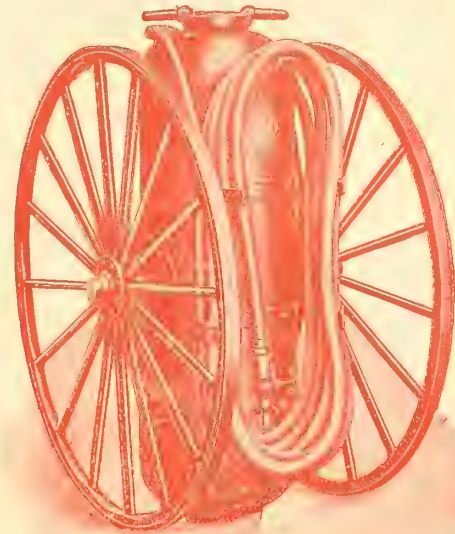
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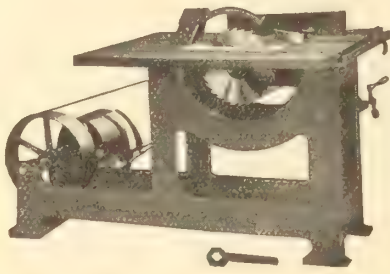
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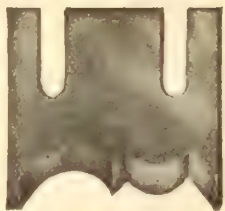
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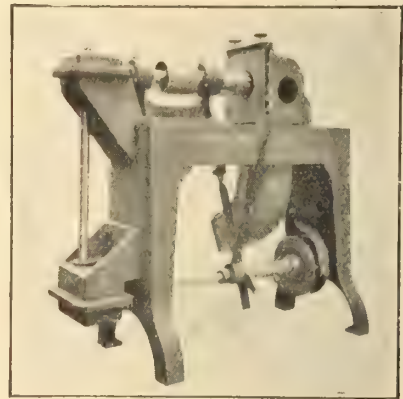


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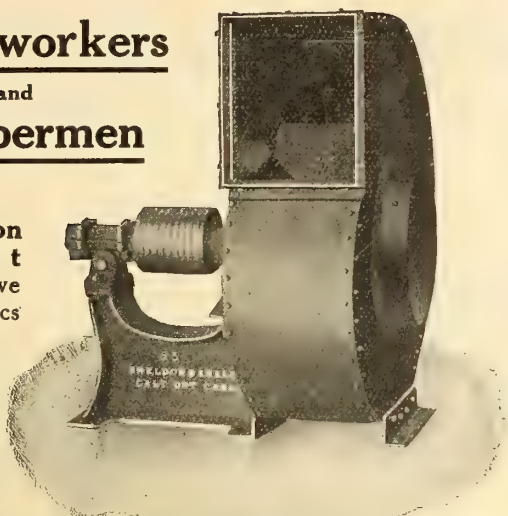
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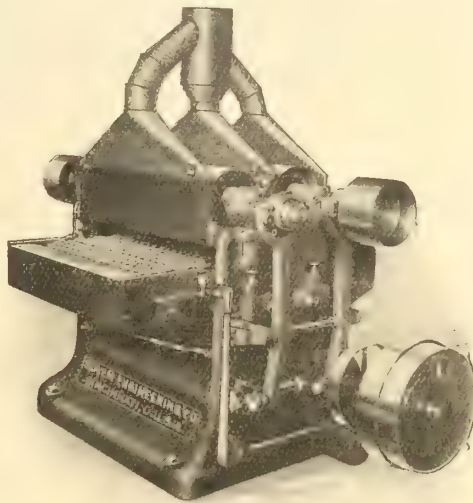
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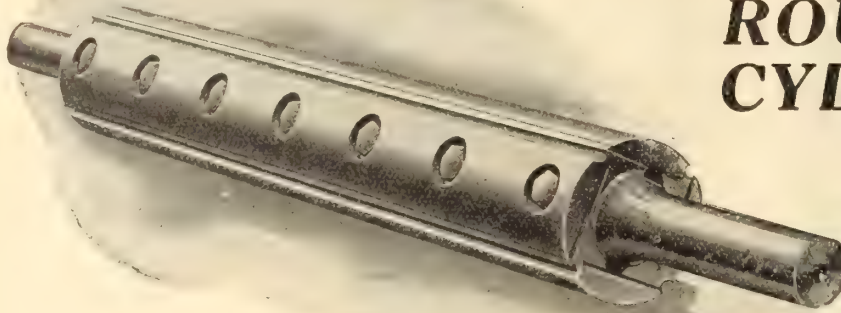
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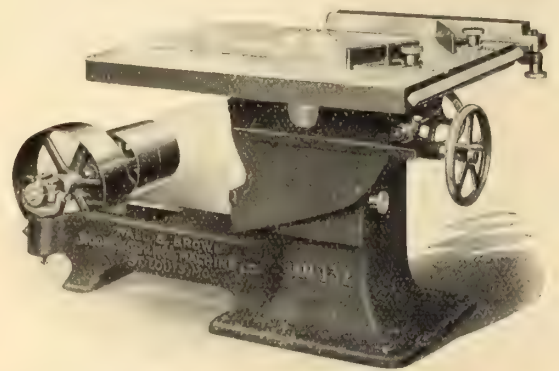
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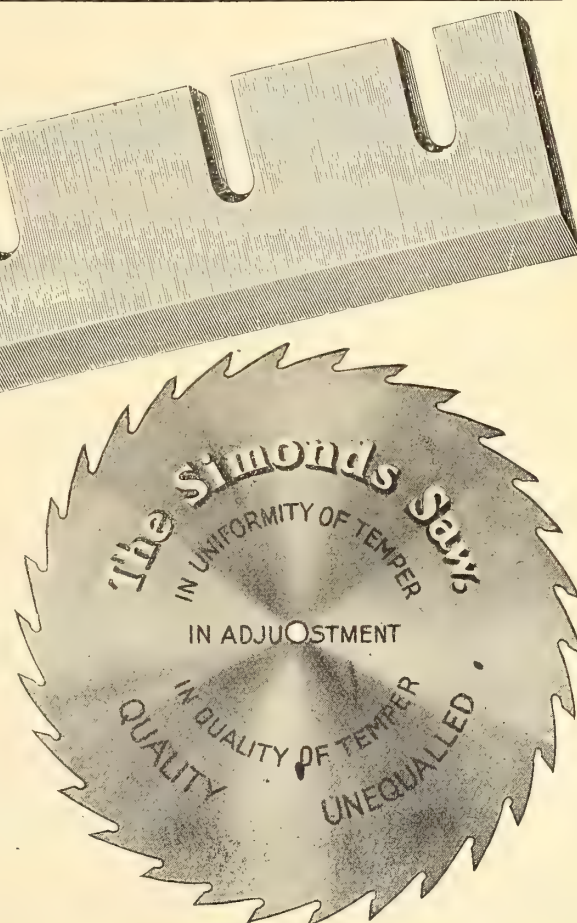
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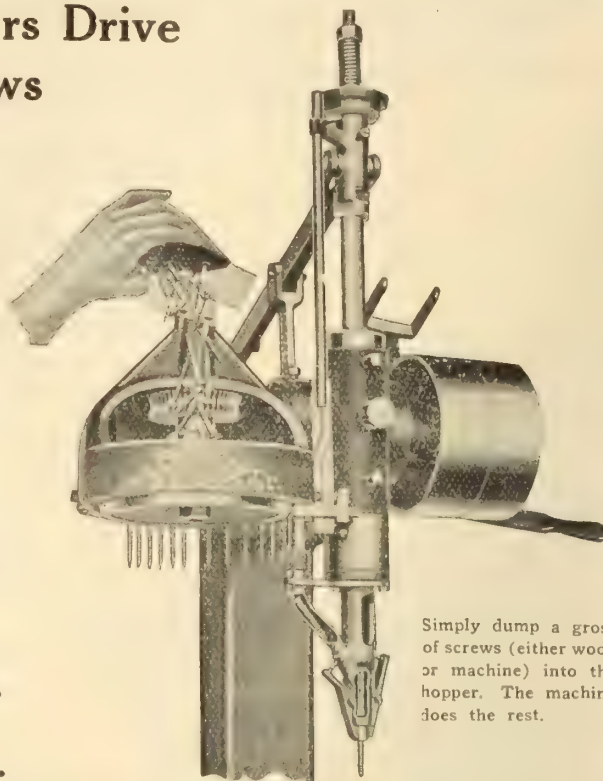


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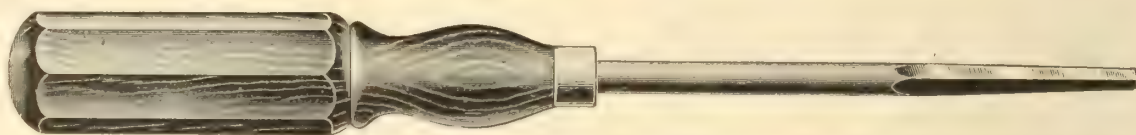
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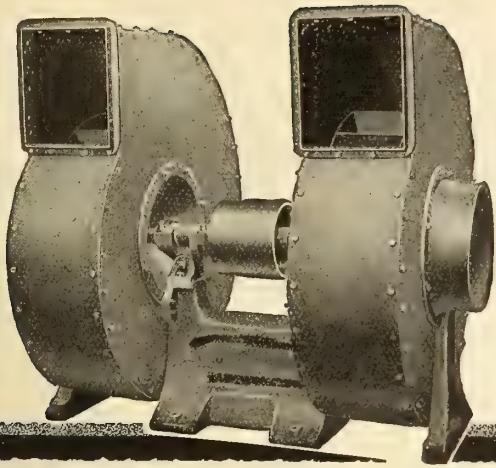
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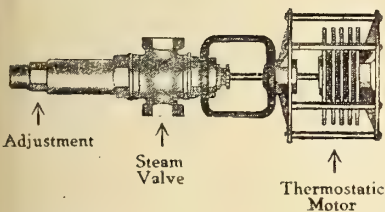
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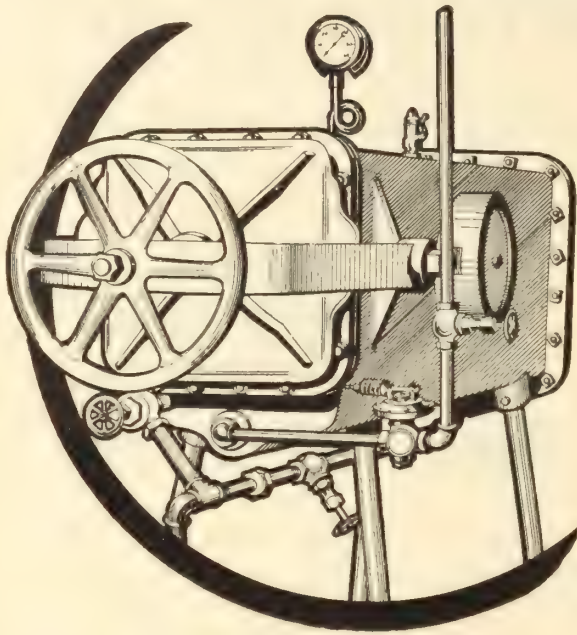
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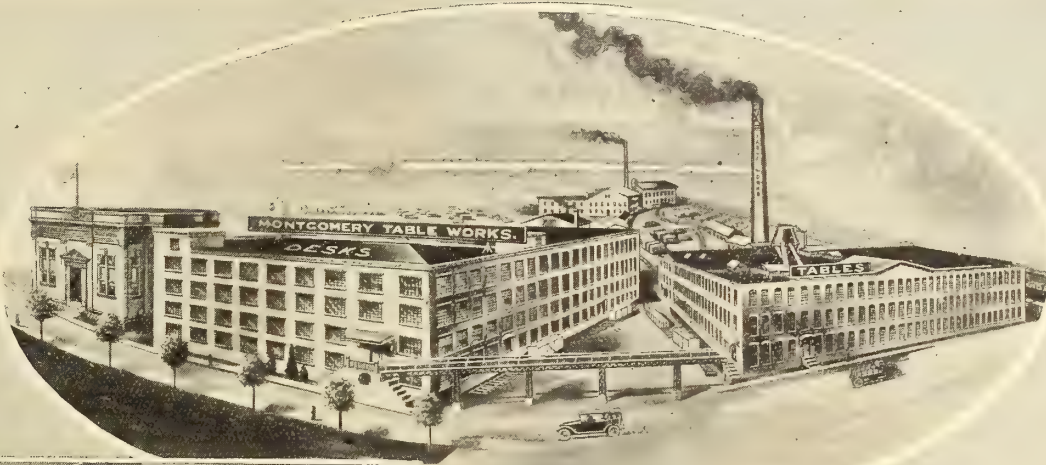
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BALL BEARINGS

Chapman Double Ball Bearing Co., Toronto.

BALUSTER LATHES

Garlock-Walker Machinery Co., Toronto, Ont.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.

BAND SAW FILING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

BAND SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, Que.
Yates Machine Co., P. B., Hamilton, Ont.

BAND SAW MACHINERY

Williams Machinery Co., A. R., Toronto, Ont.

BAND SAW STRETCHERS

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

BENDING MACHINES

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Perfection Wood Steaming Retort Company, Parkersburg, W. Va.
Williams Machinery Co., A. R., Toronto, Ont.

BLOWERS

Canadian Blower & Forge Co., Kitchener, Ont.
Sheldons, Limited, Galt, Ont.
Toronto Blower Co., Toronto, Ont.

BLOW PIPING

Canadian Blower & Forge Co., Kitchener, Ont.
Sheldons, Limited, Galt, Ont.
Toronto Blower Company, Toronto, Ont.

BOILER ROOM EQUIPMENT

Canadian Morehead Mfg. Co., Woodstock, Ont.

BORING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Reynolds Machine Co., Massillon, Ohio.
Root Company, B. M., York, Pa.
Virginia Hole Sawing Co., Roanoke, Va.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

BOX BANDS

Laidlaw Bale-Tie Co., Hamilton, Ont.

BOX MAKERS' MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Neilson & Company, J. L., Winnipeg, Man.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CABINET PLANERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CANE WEBBING

Overseas Reed & Cane Co., Ionia, Mich.

CARS (Transfer)

Sheldons, Limited, Galt, Ont.

CARVING MACHINES

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.

CASTERS

Faultless Caster Co., Evansville, Ind.
Foster, Merriam Co., Meriden, Conn.
Weber, Knapp Co., Jamestown, N.Y.

CLAMPS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Neilson & Company, J. L., Winnipeg, Man.
Preston Woodworking Machinery Company, Preston, Ont.

CRATING LUMBER

Elgie-Jarvis Lumber Co., Toronto, Ont.

CUT-OFF SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CUTTER HEADS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Diehl, G. M., Wabash, Ind.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hawker Mfg. Co., W. S., Dayton, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Shimer Cutter Head Co., Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CYLINDER HEADS

Cowan & Company, Galt, Ont.
Tawney Machine Co., Williamsport, Pa.

DIMENSION STOCK

Newman Sons, John P., Warton, Ont.

DOOR CARRIERS FOR DRY KILNS

Dry Kiln Door Carrier Co., Indianapolis, Ind.

DOVETAILING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

DOWEL MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Dauber-Bell Machine Co., Oshkosh, Wis.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Hawker Mfg. Co., W. S., Dayton, Ohio.
Williams Machinery Co., A. R., Toronto, Ont.

DOWELS

Canada Wood Specialty Co., Ltd., Orillia, Ont.

DRY KILNS

Canadian Blower & Forge Co., Kitchener, Ont.
Grand Rapids Veneer Works, Grand Rapids, Mich.
National Dry Kiln Co., Indianapolis, Ind.
Sheldons, Limited, Galt, Ont.

DUST COLLECTORS

Canadian Blower & Forge Co., Kitchener, Ont.
Sheldons, Limited, Galt, Ont.
Toronto Blower Company, Toronto, Ont.

DUST SEPARATORS

Canadian Blower & Forge Co., Kitchener, Ont.
Sheldons, Limited, Galt, Ont.
Toronto Blower Company, Toronto, Ont.

EDGERS (Single Saw)

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

EDGERS (Gang)

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

END MATCHING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

EXHAUST FANS

Canadian Blower & Forge Co., Kitchener, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Sheldons, Limited, Galt, Ont.
Toronto Blower Company, Toronto, Ont.

FEED ATTACHMENTS

Garlock-Walker Machinery Co., Toronto, Ont.

FLOORING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

FLUTING HEADS

Fay & Egan Co., J. A., Cincinnati, Ohio.

FURNITURE CARVINGS

Decorators Supply Co., Chicago, Ill.

FURNITURE LEATHER

Eagle-Ottawa Leather Co., Grand Haven, Mich.

FURNITURE TRIMMINGS

Faultless Caster Co., Evansville, Ind.
Foster, Merriam Co., Meriden, Conn.
Weber, Knapp Co., Jamestown, N.Y.

GARNET PAPER AND CLOTH

Carborundum Co., Niagara Falls, N.Y.

GRAINING MACHINES

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDING WHEELS

Carborundum Co., Niagara Falls, N.Y.

GLUE

Bury & Co., Robt., Toronto, Ont.
Canada Glue Company, Brantford, Ont.
Certis Cold Glue Co., Detroit, Mich.
Kane Manufacturing Co., Chicago, Ill.
Perkins Glue Company, South Bend, Ind.

GLUE CLAMPS

Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Neilson & Company, J. L., Winnipeg.

GLUE HEATERS

Fay & Egan Co., J. A., Cincinnati, Ohio.
International Electric Co., Indianapolis, Ind.
Jackson, Cochrane & Company, Kitchener, Ont.
Pringle, R. E. T., Toronto, Ont.

GLUE JOINTERS

Canada Machinery Corporation, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

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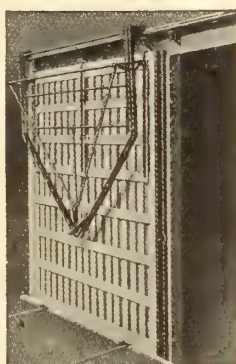
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heat, trouble and money.

Carrier lifts door clear of kiln
and carries it down track. Re-
turning, deposits door to rabbet-
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tight by its own weight. Appli-
cable to old or new kilns.

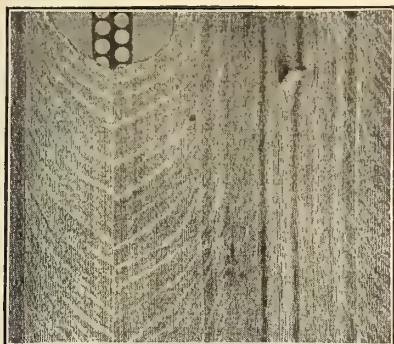
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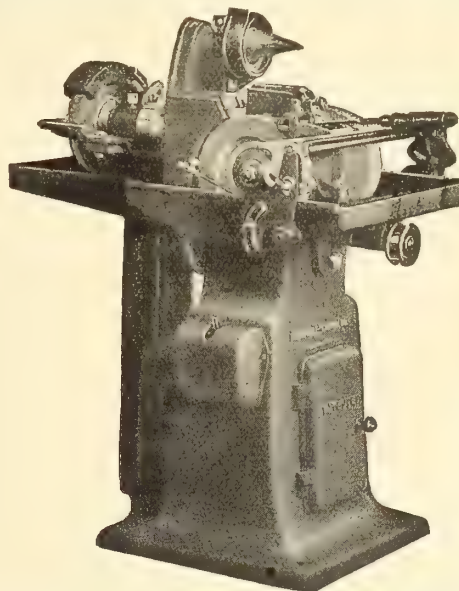
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HANOVER, PA.

"Canadian Woodworker" Buyers' Directory—Continued

GLUE SPREADERS

Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GLUE ROOM EQUIPMENT

Perrin & Company, W. R., Toronto, Ont.

GLUING MACHINES

Francis & Co., Chas. E., Rushville, Ind.

GRINDERS (Cutter)

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

GRINDERS (Knife)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GRINDING WHEELS

Carborundum Co., Niagara Falls, N.Y.

GROOVING HEADS

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.

GUM LUMBER

Aberdeen Lumber Co., Pittsburg, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
Anderson-Tully Co., Memphis, Tenn.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bellgrade Lumber Co., Memphis, Tenn.
Brown & Co., George C., Memphis, Tenn.
Churchill-Milton Lumber Co., Louisville, Ky.
Cornelius Lumber Co., St. Louis, Mo.
Gum Lumber Association, Memphis, Tenn.
Heyser Lumber Co., W. E., Cincinnati, Ohio.
Holly Ridge Lumber Co., Louisville, Ky.
Paepcke-Leicht Lumber Co., Chicago, Ill.
Probst Lumber Co., Cincinnati, Ohio.
Thomas & Proetz Lumber Co., St. Louis, Mo.
Wisconsin Lumber Co., Chicago, Ill.

HAND SCREWS

Fay & Egan Co., J. A., Cincinnati, Ohio.

HANDLE & SPOKE MACHINERY

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Whitney & Son, Baxter D., Winchendon, Mass.

HARDWARE

Laidlaw Bale-Tie Co., Hamilton, Ont.
Weber, Knapp Co., Jamestown, N.Y.

HARDWOOD LUMBER

Aberdeen Lumber Co., Pittsburg, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
American Oak Mfrs.' Assn., Memphis, Tenn.
American Walnut Association, Washington D.C.
Anderson-Tully Co., Memphis, Tenn.
Atlantic Lumber Company, Toronto, Ont.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bellgrade Lumber Co., Memphis, Tenn.
Bonner & Sons, J. H., Memphis, Tenn.
Brown & Company, Geo. C., Memphis, Tenn.
Burns & Knapp Lumber Co., Conneautville, Pa.
Bury & Company, Robert, Toronto, Ont.
Cornelius Lumber Co., St. Louis, Mo.
Canadian General Lumber Co., Toronto, Ont.
Churchill-Milton Lumber Co., Louisville, Ky.
Darby Hardwood Lumber Co., Memphis, Tenn.
Dooley Lumber Co., F. T., Memphis, Tenn.
Elgie & Jarvis Lumber Co., Toronto, Ont.
Evansville Band Mill Co., Evansville, Ind.
Gayoso Lumber Co., Memphis, Tenn.
Hart & McDonagh, Toronto, Ont.
Heyser Lumber Co., W. E., Cincinnati, Ohio.
Holly Ridge Lumber Co., Louisville, Ky.
Hunt, Wellington & Smith, Nashville, Tenn.
Kersley, Geo., Montreal, Que.
Korn-Conkling Co., Cincinnati, Ohio.
Lawrence & Co., P. J., St. Louis, Mo.
Long-Knight Mfg. Co., Indianapolis, Ind.
Maley & Wertz, Evansville, Ind.
McLennan Lumber Co., Montreal, Que.
Memphis Band Mill Co., Memphis, Tenn.
Mowbray & Robinson, Cincinnati, Ohio.

Paepcke Leicht Lumber Co., Chicago, Ill.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City.
Percy E. Heehney, Kitchener, Ont.
Pickrel Walnut Co., St. Louis, Mo.
Probst Lumber Co., Cincinnati, Ohio.
Shafer Hardwood Co., John I., South Bend, Ind.
Spencer, C. A., Montreal, Que.
Stark & Co., Jas. E., Memphis, Tenn.
Stimpson & Co., J. V., Owensboro, N. Y.
Wisconsin Lumber Co., Chicago, Ill.

HYDRAULIC VENEER PRESSES

Perrin & Company, Wm. R., Toronto, Ont.

JOINTERS

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

LATHES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.

MACHINE KNIVES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

METALINE NAILS

Dominion Tack & Nail Co., Galt, Ont.

MITRE SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

MOULDERS

Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Vonnegut Machinery Co., Indianapolis, Ind.

MULTIPLE BORING MACHINES

Root Company, B. M., York, Pa.

MULTIPLE BOXING MACHINES

Fay & Egan Co., J. A., Cincinnati, Ohio.
Nash, J. M., Milwaukee, Wis.

OIL STONE GRINDERS

Mummert-Dixon Co., Hanover, Pa.

PANELS

Hay & Co., Limited, Woodstock, Ont.
Waetjen & Co., George L., Milwaukee, Wis.

PATTERN SHOP MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PERIOD TURNINGS

Walter & Sons, J., Kitchener, Ont.

PLANERS

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLANING MILL MACHINERY

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PRESSES (Veneer)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Co., Wm. R., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

PULLEYS

Bernard Industrial Co., A., Fortierville, Que.

RESAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RIM AND FELLOE MACHINERY

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.

RIP SAWING MACHINES

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RUBBING MACHINES

DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.
Paasche Air Brush Co., Chicago, Ill.

SAFETY DEVICES

Cowan & Company, Galt, Ont.

SANDERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

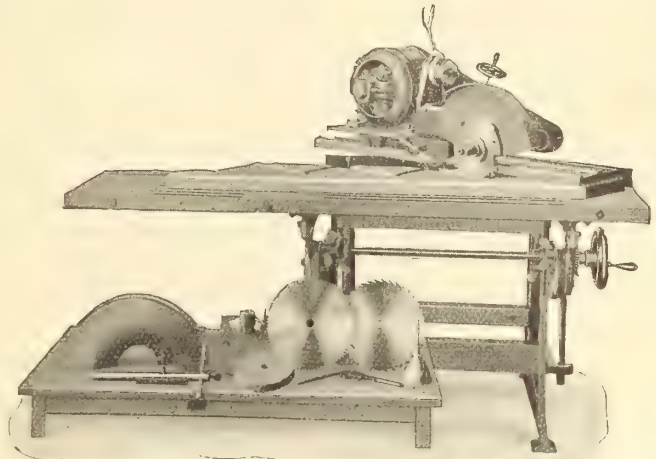
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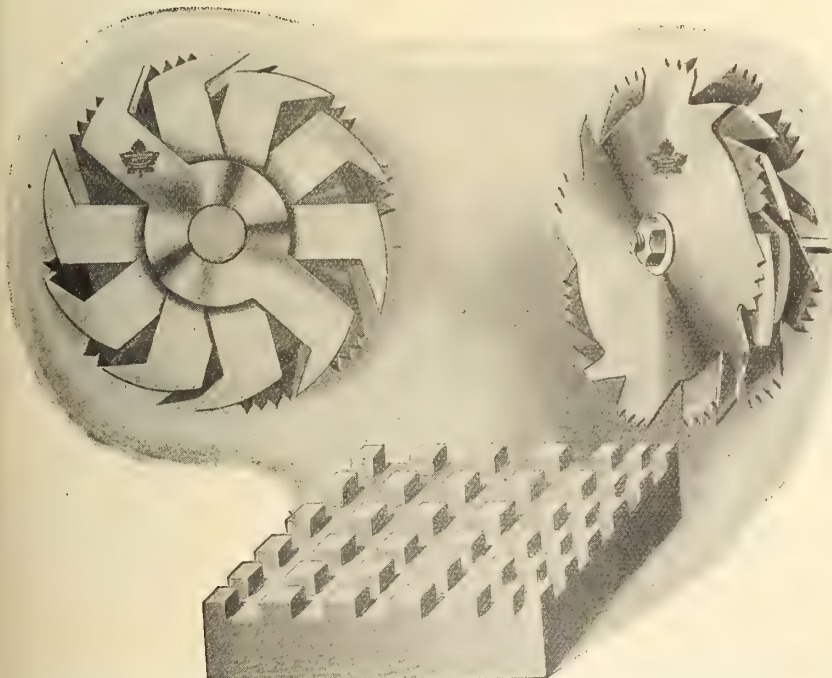
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GALT CANADA

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"Canadian Woodworker" Buyers' Directory—Continued

SASH, DOOR & BLIND MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAWS

Atkins & Co., E. C., Indianapolis, Ind.
Radcliff Saw Mfg. Company, Toronto, Ont.
Shurly-Dietrich, Ltd., Galt, Ont.
Simonds Canada Saw Co., Montreal, Que.

SAW SWAGES

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.

SAW TABLES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SCRAPING MACHINES

Canada Machinery Corporation, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.

SCREW DRIVING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Reynolds Machine Co., Massillon, Ohio.

SCROLL SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SECOND-HAND MACHINERY

Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

SHAPERS

American Woodworking Machinery Company, Rochester, N.Y.
Cowan & Company, Galt, Ont.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS

Canadian Blower & Forge Co., Kitchener, Ont.
Sheldons Limited, Galt, Ont.
Toronto Blower Company, Toronto, Ont.

SHOOK BUNDLER

Neilson & Company, J. L., Winnipeg, Man.

SPRING MATTRESS FRAMES

Newman Sons, J. P., Warton, Ont.

SPRINGS FOR UPHOLSTERY

Weber, Knapp Co., Jamestown, N.Y.

STAINS

Ault & Wiborg, Toronto, Ont.
Du Pont Fabrikoid Co., Toronto.
Marietta Paint & Color Co., Marietta, Ohio.

SINGLE SPINDLE BOXING MACHINES

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.

STAVE SAWING MACHINE

Whitney & Son, Baxter D., Winchendon, Mass.

SURFACERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES

Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES

Walter & Company, B., Wabash, Ind.

TACKS AND NAILS

Canada Tack & Nail Co., Hamilton, Ont.
Dominion Tack & Nail Co., Galt, Ont.

TEMPERATURE REGULATORS

Canadian Powers Regulator Co., Toronto, Ont.

TENONING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TIME CLOCKS

International Business Machines Co., Toronto, Ont.

TRIMMERS

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRUCKS

Sheldons Limited, Galt, Ont.
National Dry Kiln Co., Indianapolis, Ind.

UPHOLSTERER'S FLOCK AND BATTING

Bauers Limited, Waterloo, Ont.

VARNISHES

Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg Company, Toronto, Ont.
Du Pont Fabrikoid Co., Toronto.
Jamestown Wood Finishing Co., Jamestown, N.Y.
Penfound Varnish Co., Toronto, Ont.

VARNISH SPRAYERS

DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

VENEERS

Bury & Company, Robert, Toronto, Ont.
Central Lumber Co., Indianapolis, Ind.
Christman Veneer & Lumber Co., St. Louis, Mo.
Dean Spicker Company, Chicago, Ill.
Empire Veneer Company, Chicago, Ill.
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Geo. Kersley, Montreal, Que.
Korn-Conkling Co., Memphis, Tenn.
Long-Knight Lumber Co., Indianapolis, Ind.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Nartzik, J. J., Chicago, Ill.
National Veneer & Lumber Co., Indianapolis, Ind.
North Vernon Lumber Co., North Vernon, Ind.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Roberts & Co., John N., New Albany, Ind.
Southern Veneer Mfg. Co., Louisville, Ky.
Thompson Veneer Co., W. T., Edinburgh, Ind.
Toronto Veneer Company, Toronto, Ont.
Veneer Manufacturers Co., Chicago, Ill.
Waetjen & Co., George L., Milwaukee, Wis.

VENEER TAPE

Ideal Coated Paper Co., Brookfield, Mass.

VENTILATING APPARATUS

Canadian Blower & Forge Co., Kitchener, Ont.
Sheldons Limited, Galt, Ont.

VENEER JOINTERS

Garlock-Walker Machinery Co., Toronto, Ont.

VENEER MACHINERY

Garlock-Walker Machinery Co., Toronto, Ont.

VENEER PRESSES (Hand and Power)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Company, Wm. R., Toronto, Ont.

VICES

Fay & Egan Co., J. A., Cincinnati, Ohio.

WOOD FINISHES

Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg, Toronto, Ont.
Jamestown Wood Finishing Co., Jamestown, N.Y.
Penfound Varnish Co., Toronto, Ont.

WALNUT LUMBER

American Walnut Association, Washington, D.C.
Pickrel Walnut Company, St. Louis.

WOOD SCREWS

Robertson Mfg. Co., P. L., Milton, Ont.

WOOD TURPENTINE

Brown Corporation, Quebec, Que.

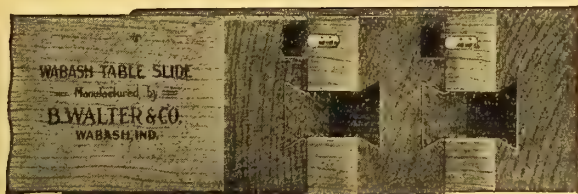
WOOD TURNING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Mattison Machine Works, Rockford, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES

Fay & Egan Co., J. A., Cincinnati, Ohio.

THE SLIDE IS THE HEART OF YOUR EXTENSION TABLE



*If the Slide Does Not Work Properly
Your Whole Table is Condemned*

**Wabash Slides insure
Satisfied Customers**

SLIDE MAKING is a SPECIALTY BUSINESS

We can Furnish Better Slides for Less Cost

**Eliminate Slide Troubles by using
WABASH SLIDES**

MADE BY

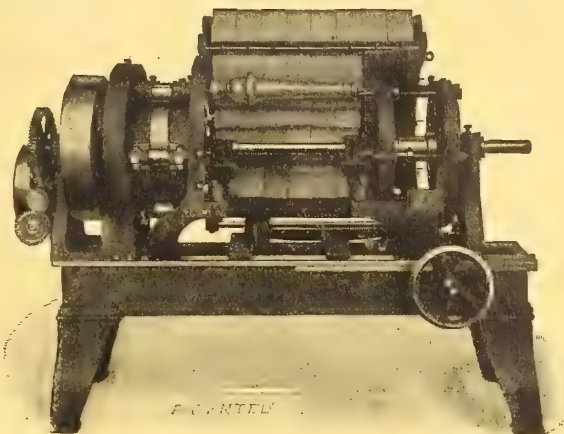
B. Walter & Company

Edsall St., Wabash, Ind.

Canadian Representative:

A. B. CAYA, 28 King St. East, Kitchener, Ont.

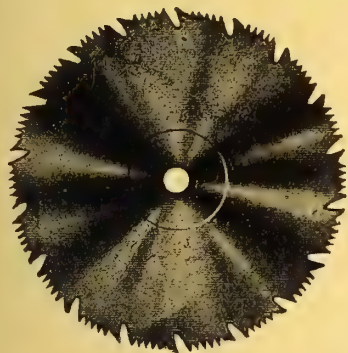
PLUG THE LEAK with a NASH SANDER



If you have no Nash Sander for your furniture or chair turnings, there is a big leak in your sanding department through which your profits are disappearing rapidly.

Hand labor is expensive; use a machine.

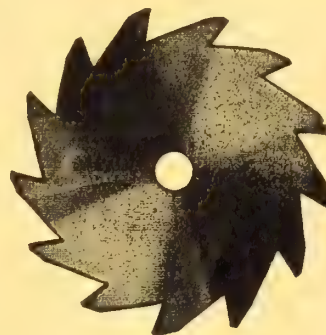
J. M. NASH, Milwaukee, Wis.



ATKINS

STERLING QUALITY

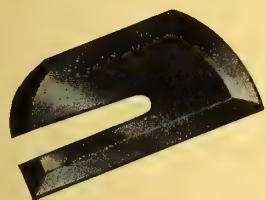
SAWS and KNIVES



The best steel—the most careful and accurate workmanship—the equipment that will eventually save you money.

Atkins Sterling Quality Saws and Knives are proving their superiority by competitive tests in the largest plants of the country. We welcome your most careful investigation, as we know the satisfaction that will result.

Write to-day for our Knife Booklet "CW"
and Pattern Template Paper.



E. C. ATKINS & CO.

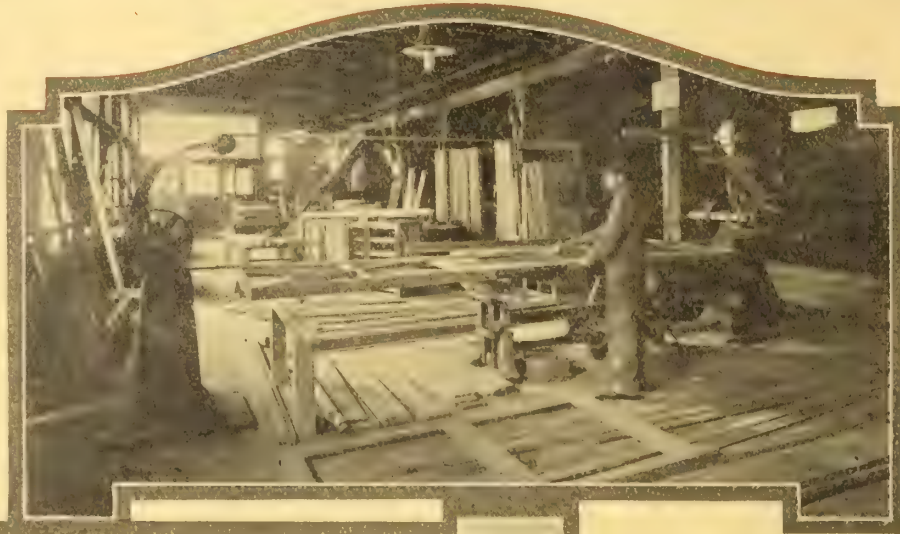
Makers of Sterling Saws

Factory—HAMILTON, Ont.

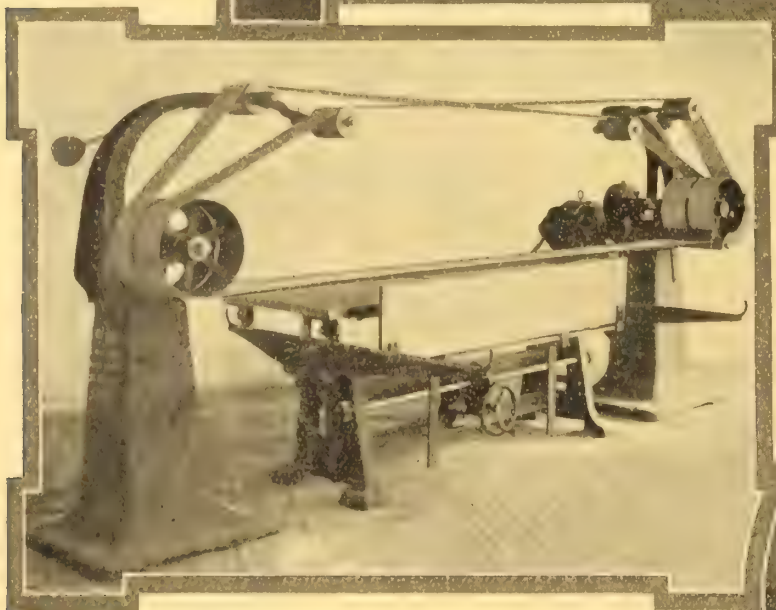
Vancouver Branch—109 Powell Street

3 Popular Types of Mattison Belt Sanders

Mile-a-minute Sandbelt Travel combined with the principle of hand sanding make the Mattison "138" Hand Block Belt Sander the most practical all-around type of Sander for the average shop.



The flexible Sandbelt on this machine enables you to handle to better advantage, much work now being done on other Sanders and in addition, a great deal of irregular work no other type of Sander can reach.



The Mattison "136" Double Belt machine is an expansion of the "138." It carries one coarse, and one fine-grained sandbelt, eliminating the re-handling of large veneered panels, and similar work.

The Mattison "134" Universal Open End Sander takes up no more floor space than the "138" and at the same time it's open-end adjustability allows it to handle exceptionally long and bulky work, such as counter tops, cedar chests, phonograph cabinets, etc. The belt may be elevated to any position from the table level to five feet from the floor.



You might be paying for one of these machines right now, and not realizing it. Why not write to us for further specifications, and find out?

Mattison Machine Works, Rockford, Ill., U. S. A.

Selling Representatives for New England, Baxter D. Whitney & Son, Inc., Winchendon, Mass.

CANADIAN WOODWORKER

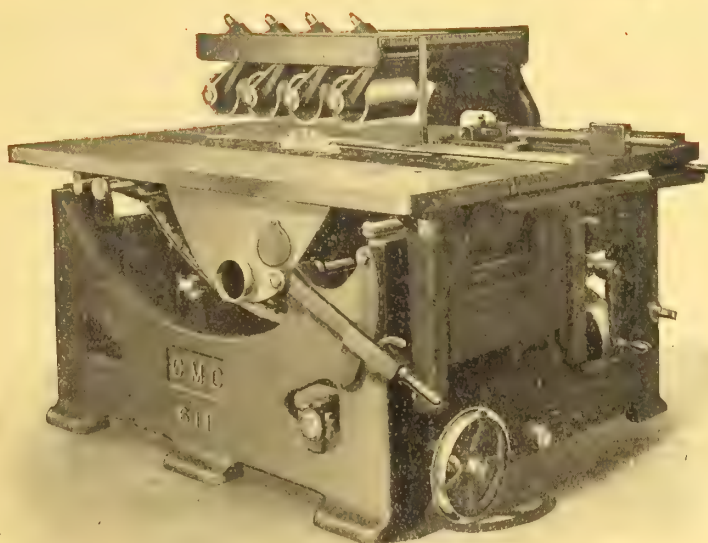
and
Furniture Manufacturer



**OUR
CONFIDENCE**

IN OUR

No. 611



We know that we have in our No. 611 Straight Edging and Jointing machine the all round and best machine of this type upon the Canadian or any other market. Hence our confidence in bringing it to the attention of all Piano and Furniture manufacturers and other woodworkers. We claim that it is the strongest feeding and cutting machine as well as the most accurate of its class. Every user of this machine is more than satisfied with his results and we are prepared to demonstrate from machines in actual every day service that our claims are justified.

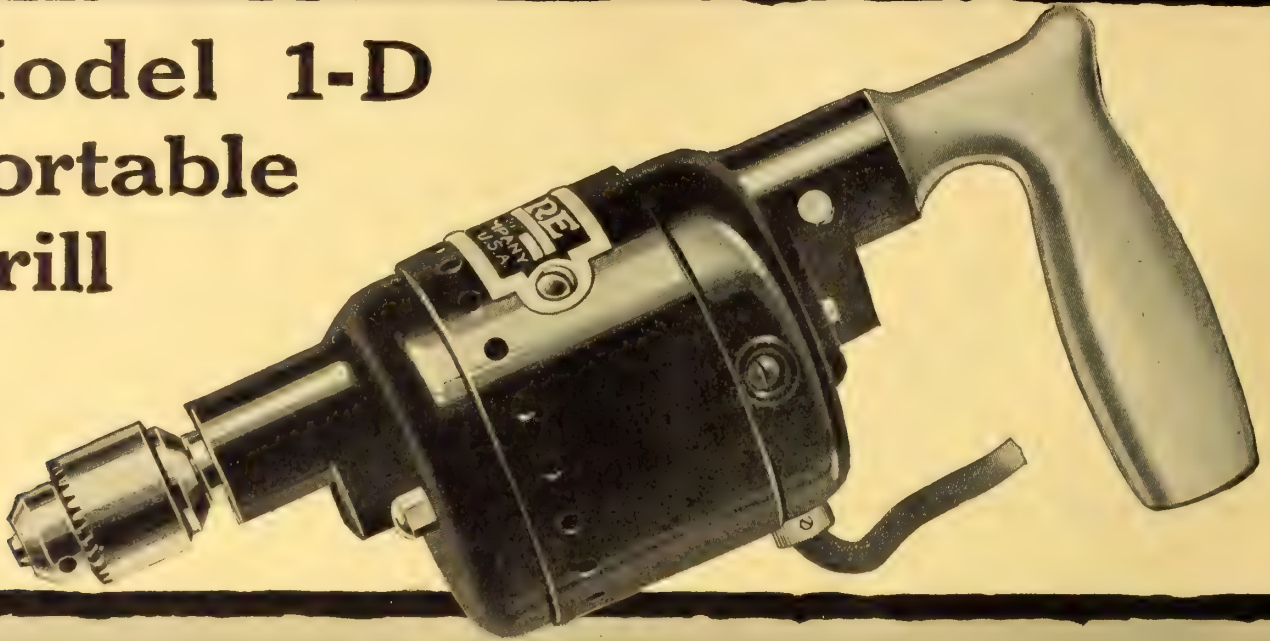
If you are interested in reducing the cost of production in your plant our special bulletin "Cut your Costs on a No. 611 Straight Edging and Jointing Machine" will be of interest to you and will show you a sure way of offsetting the ever mounting cost of labor.

CANADA MACHINERY CORPORATION, LIMITED, GALT, ONTARIO

Toronto Office and Warerooms

Brock Avenue Subway

Model 1-D Portable Drill



HANDY—ECONOMICAL—EFFICIENT

Specifications:

Length—10 inches.

Weight—4 $\frac{3}{4}$ pounds.

Capacity—Steel, 0 to $\frac{3}{16}$ " Wood and alloys, 0 to $\frac{1}{4}$ ".

Motor—Universal, on either direct or alternating current.

Diameter of Motor—3 $\frac{3}{8}$ inches.

Spindle—Offset from center $\frac{3}{16}$ ".

Helical Gears.

Aluminum Handle.

Complete with 10-ft. cord, plug, switch and chuck.

Jacob's Chucks used as a regular equipment.

FOR speed in drilling and counter-sinking small holes, this tool is just what you need. It can be used on any kind of material—steel, iron, brass, aluminum or wood—and gives lasting service.

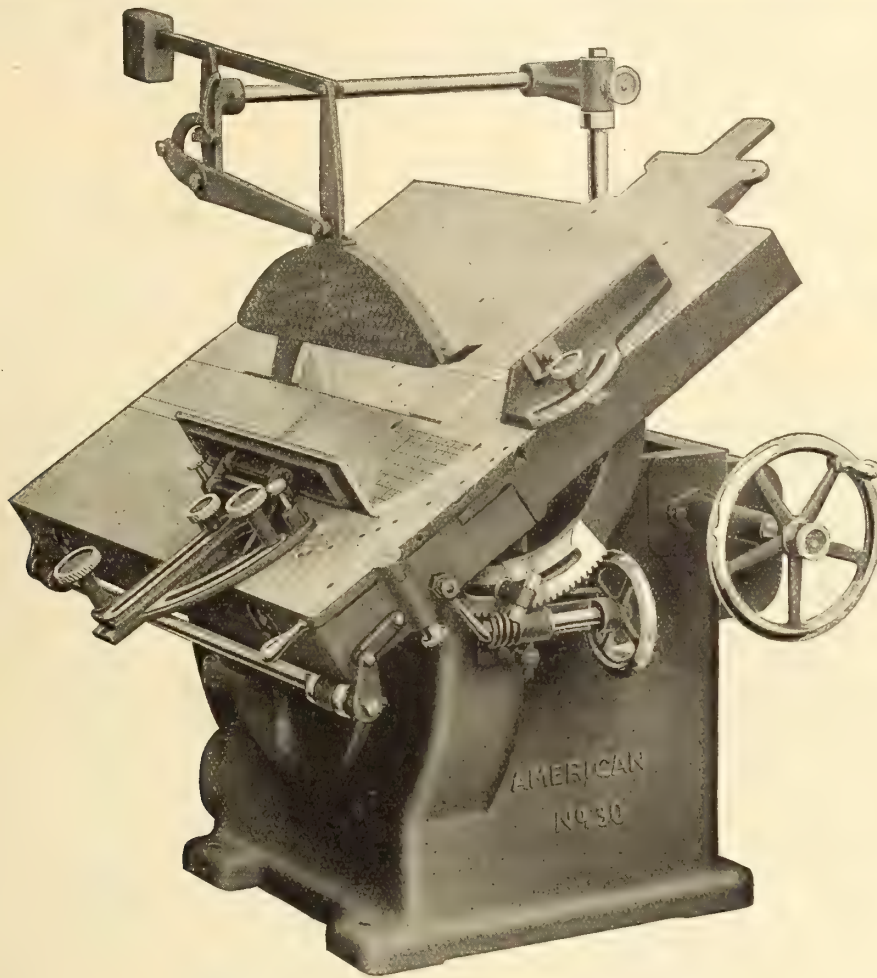
If your dealer cannot supply you with the Model 1-D, tell us about your requirements.

Wisconsin Electric Company
7113 Sixteenth Street, Racine, Wisconsin, U. S. A.

DUMORE GEARED ELECTRIC DRILLS

A Page from Our Catalog

AMERICAN WOOD WORKING MACHINERY COMPANY



Showing Table Tilted and Rip Gauge to Left of Saw.

American No. 30 Universal Saw Bench

OUR No. 30 Universal Saw Bench is a machine that will do ripping, cross-cutting and dadoing in an efficient and thorough manner. It will cut a perfect mitre; it will measure any angle instantly and accurately; it will cut off to length or rip to width—all without the operator having to do any previous calculating or even referring to a rule. It is built with extreme care, like an iron-working tool, to insure absolute accuracy of operation. "Built like an iron-working tool" is not merely a phrase with us—it is a fact characteristic of American wood-working machines. We know how, and do make iron-working tools of the highest order and these machines are of the same high class.

CAPACITY—Rips from 1-16 to 27½-in. and cuts off to 31-in. wide when saw is set for 2-in. thick. An 18-in. saw may project 5¾-in. above the table. The table tilts to 45 degrees for bevel sawing. Two 18-in. saws, 1½-in. hole, are furnished. If necessary one 20-in. saw (not adjustable) can be used. Dado heads 2½-in. wide can be used.

Write for large illustration and complete details.

Address office nearest you.

CANADIAN SALES AGENTS

Garlock-Walker Machinery Company

Limited

32 Front Street West, TORONTO, ONT.

Toronto

Montreal

Winnipeg

NEW YORK

ROCHESTER

CHICAGO

NEW ORLEANS

SAN FRANCISCO

PORTLAND ORE.

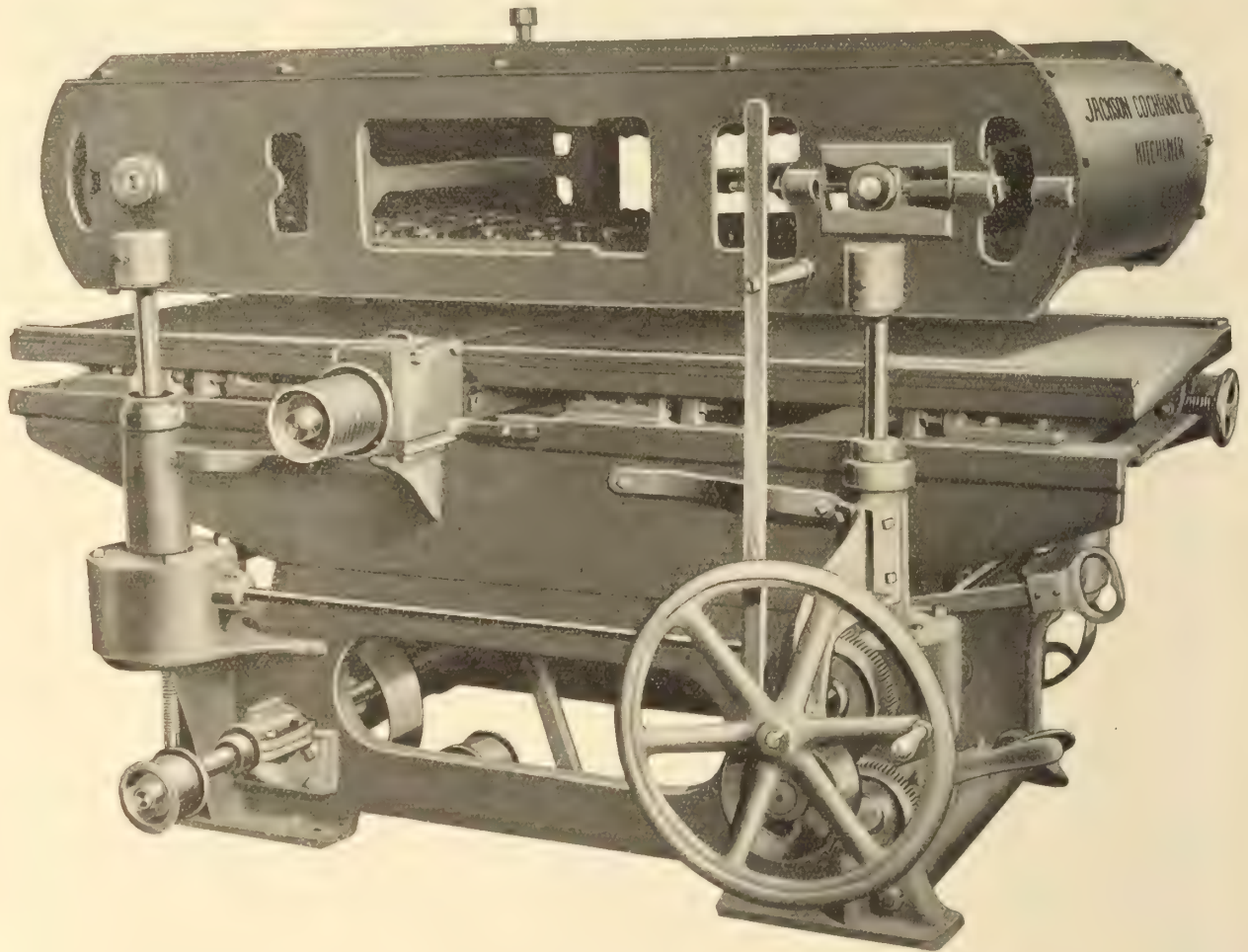
The Herzog Self-Feed Jointer

means

Increased Production
Small Floor Space

Simplicity of Operation
Safety to Employees

Does Four Times the Work of the Hand Jointer

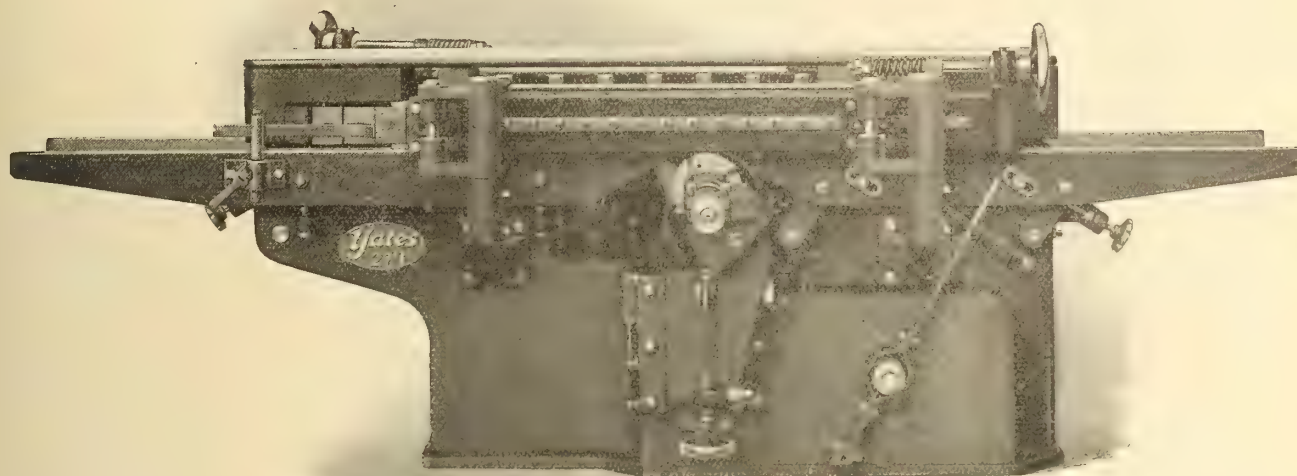


Our No. 34 Herzog Jointer, illustrated above, is one of the most efficient machines on the market to-day. It is appreciated by the manufacturer and employees alike, because, while it will produce from three to five times as much work as the hand jointer, it does not require skilled operators, but eliminates the danger so common to other makes. It can be operated by two boys. It will handle stock varying in width from 1 inch to the full width of the jointer, will feed fast or slow, takes only one-fourth the floor space of hand jointers, and requires only one-fifth of the sharpening of the knives. It is fitted with power feed raising and lowering attachment, with cylinder double belted and driven from both ends.

If interested in reducing your costs, write us.

Jackson, Cochrane & Company
KITCHENER - CANADA

It Answers the "S.O.S." Call of the Refuse Pile



Short ends that are usually split up for kindling or burned with other refuse, can be salvaged by the use of the

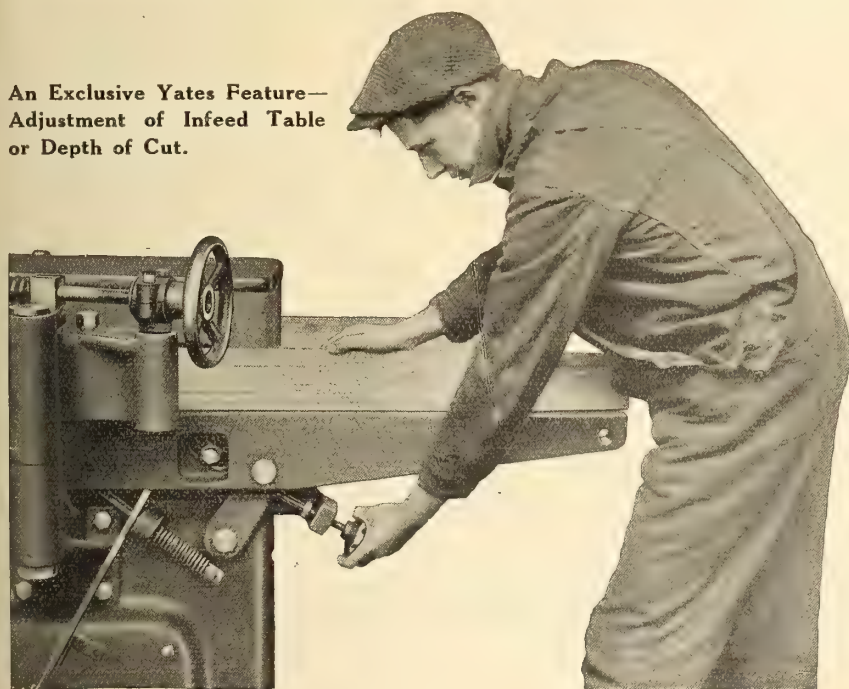


No. 213 Continuous Feed Glue Jointer

"The Invariable Choice of the Man Who Knows."

Labor is scarce and materials are high, so every short end should be utilized for profit. The only way this can be done is to prepare them for gluing, and that is where the Yates No. 213 plays its part.

An Exclusive Yates Feature—
Adjustment of Infeed Table
or Depth of Cut.

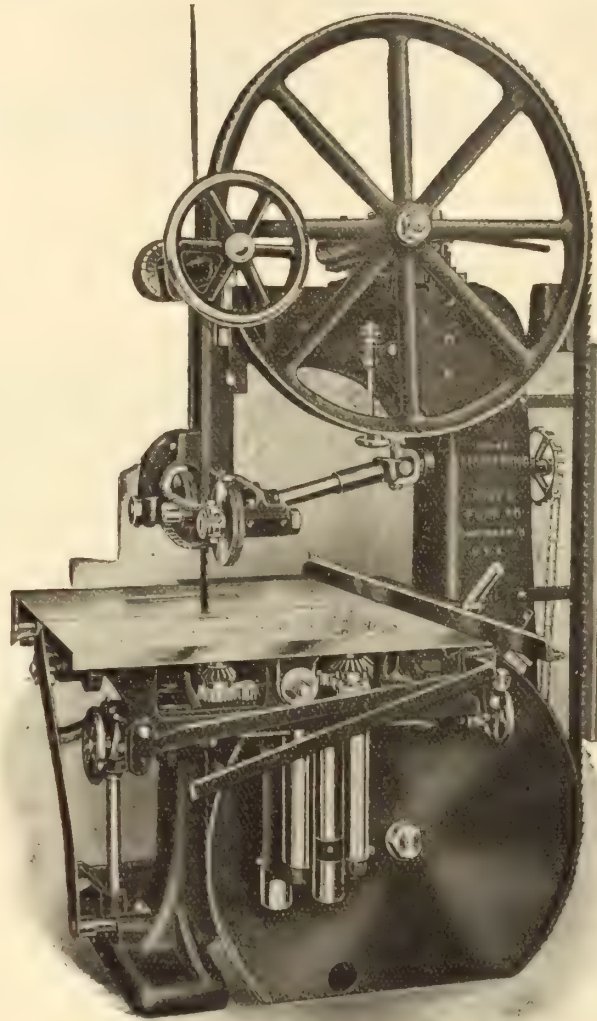


It joints short and narrow stock automatically and continuously at no more cost than jointing larger lengths. Furthermore, the joints are perfect, and narrow stock, accurately jointed and glued together is better than wide stock, as it will not warp. In making panels, the short and narrow glued stock will not shrink and crack the veneer.

We want you to have a copy of our Glue Jointer Book. Just say you want one, using your letterhead, and we will send it free, and without obligation.

P. B. Yates Machine Co. Ltd.
HAMILTON, ONT. CANADA

U. S. Plant, BELOIT, WIS., U.S.A.



Ready in a Moment to Either Rip or Resaw

If your combined ripping and resawing does not exceed 50 to 60 M lineal feet per day on soft woods, or 20 to 25 M feet on hard woods, you do not need to put in two separate machines.

A Fay-Egan No. 146 will take care of all this work in the most economical manner.

At the very beginning you save the price of one machine.

You save the space occupied by one machine.

You realize the highest return on your investment, as the one machine is kept busy all the time.

By simply reversing the table and raising or lowering the ripping rolls, the No. 146 is changed from a rip to a resaw or from a resaw to a rip saw—it takes but a moment to do this.

As a rip saw, it will handle material up to 24 inches wide.

As a resaw, it will cut to the center of 8 inches and up to 18 inches under the guide.

The No. 146 has all of the advantages of a separate band rip or resaw.

You can find out more about this economical machine by asking for Bulletin N-3

J. A. FAY & EGAN CO.

153-163 W. Front St.

CINCINNATI, O.

The "Shimer Limited" Expansion Head

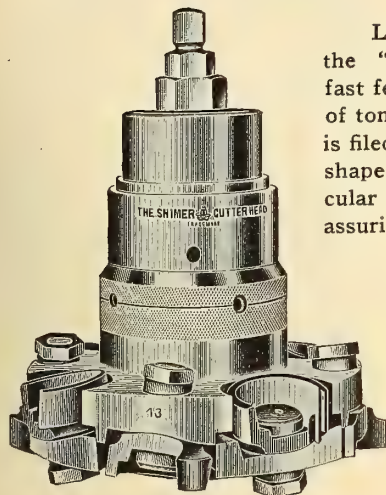


Fig. 627

Let us draw your attention to the advantages of using the "SHIMER CUTTER HEAD" for general Mill and fast feed Planer work. The Cutter is turned to cut the shape of tongue and groove desired, so that to sharpen the cutter it is filed or ground on its face, guaranteeing the user the same shape of cut during the life of the cutter. The bit being circular has from $3\frac{1}{2}$ in. to 5 in. cutting length to the cutter, assuring long wearing life to the cutters.

Note that the cutter, being fastened to a concave seat on a compound angle, assures the user of the proper clearance of cutters, consequently they never burn.

These heads are fitted with or without the Self-Centering Sleeve, and made Expansion or Solid, to suit the customer's wishes.

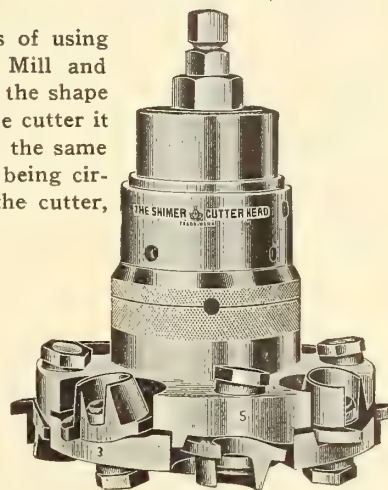


Fig. 268

Shimer Heads have been in use for sixty years, and their reliability and reputation have spoken for them in the past. Let us know your wants and we will guarantee their reliability at the present.

SHIMER CUTTER HEAD CO. OF CANADA, LIMITED

Successors to Samuel J. Shimer & Sons, Inc.

GALT, ONTARIO

GROOVING SAWS

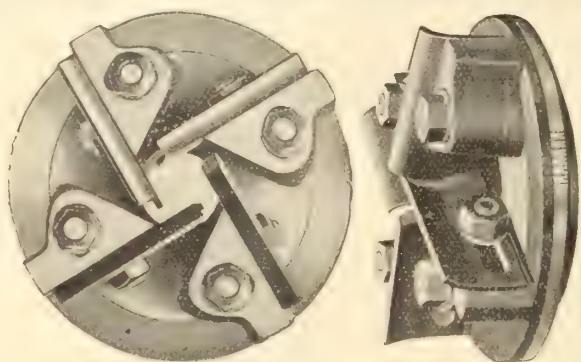


Have you ever used groover saws on your shaper? They are far superior to shaper knives for grooving, particularly on moulding work. They will cut faster and cleaner than a knife and can be built up like a dado to cut any width of groove.

We furnish these small groovers in all thicknesses. Write for our prices.

Radcliff Saw Manufacturing Company, Limited

1550 Dundas Street St. West, TORONTO

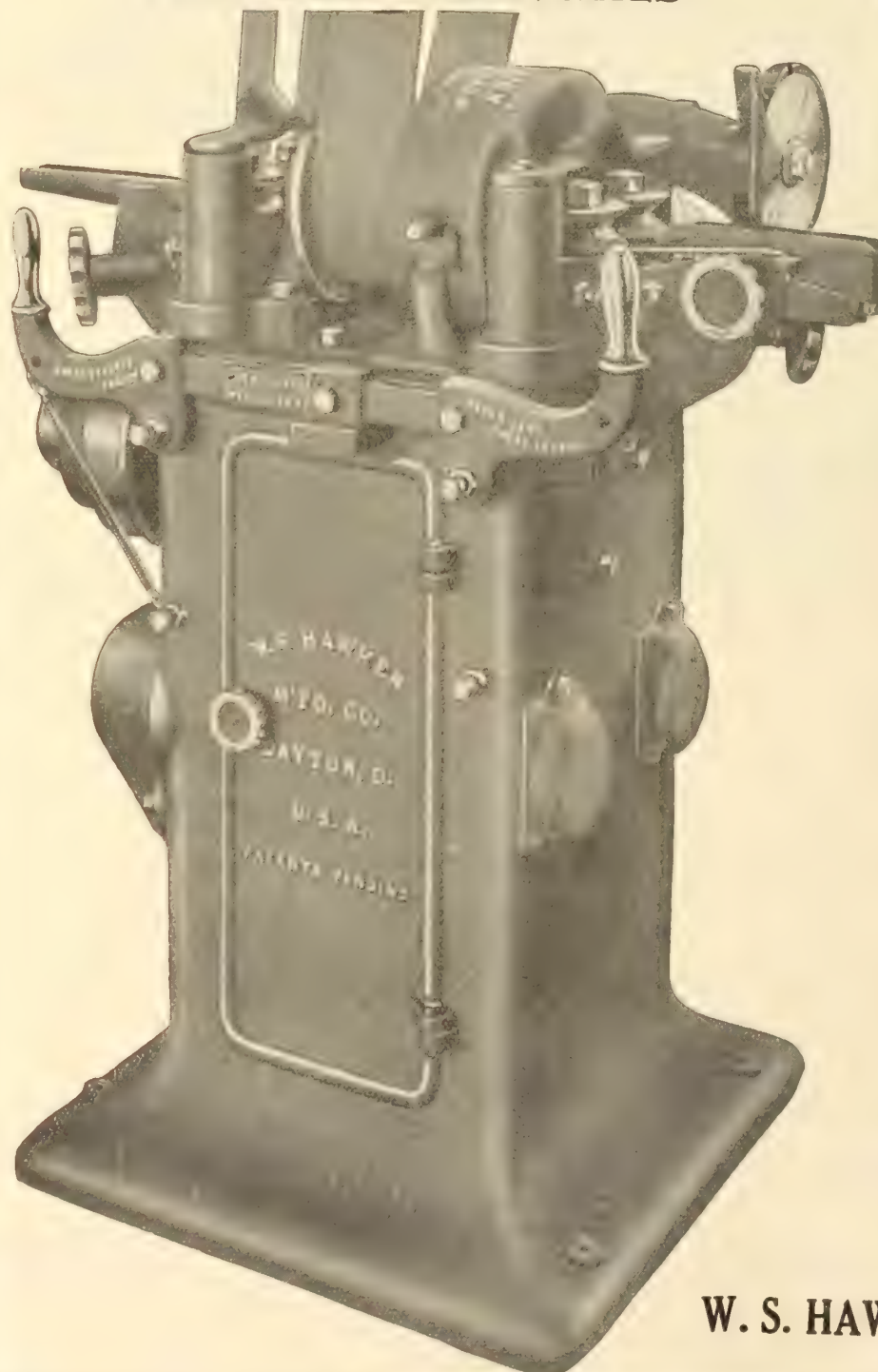


UNIVERSAL ADJUSTABLE CUTTER HEAD Patented.
Infringements (maker or user) will be vigorously prosecuted.

Two Heads

that have put
100% more profit
in the production
of Dowel Stock.

FOR SHIP TREENAILS



W. S. HAWKER.

Inventor and Designer of the World's most
efficient Tubular Turning Machinery

THE

Money Maker Adjustable Rod and Dowel Machine

The machine that is sent under a guarantee
to show you a gain of from 100 to 400 per cent.
before you buy it.

The improved dowel machine that 90 per
cent. of the largest and oldest machinery build-
ers and dealers now endorse and recommend in
preference to the solid chuck machines they
themselves previously built.

One cutter head turns from 1/4 in. to 2 in.
diameter.

Turns hard or soft wood equally well.

Handles heavy, oversized squares.

No choking of the cutter head.

Smooth stock.

Accurate sizes.

Works stock as short as five inches.

Rolls automatically centre variations in
squares.

Machines built to turn from 1/8 to 6 in.

We want to hear from every user of a solid
chuck dowel machine.

We can save you from one dollar out of
every two, to four out of every five, that the
operation of solid chuck machines costs you.

Engagements for competitive test solicited.

Formal orders not solicited. All sales made
after demonstration.

The only question is, are you willing to cut
cost of your dowel turning to one-half or one-
third of what it costs with any make of solid
chuck machine?

Machine delivers the goods before you buy.

State conditions of stock closely.

Special conditions require special equipment.

W. S. HAWKER MFG. COMPANY
DAYTON, OHIO.

Machinery for Turning Wood Products of Special Shapes

To produce in quantity at a cost low enough to meet competitive prices—to produce in quality a product at least equal to any other in its field, are aims of every manufacturer of wood turnings. Such aims are best met with Defiance automatic and semi-automatic lathes which are serving owners the world over with big output in accurately turned work at low cost.

Defiance Automatic Wood Turning Lathes

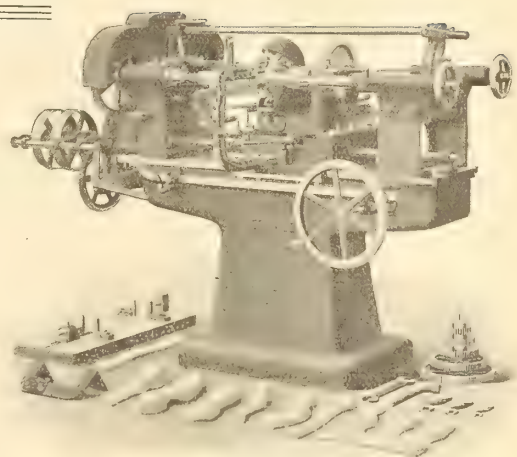
are especially adapted to turning irregular shapes, such as aeroplane propellers and struts, gun stocks, artificial limbs, saddle-trees, golf stick heads, hobby horses, spokes, etc.; variety turnings, such as table legs, balusters, baseball bats, croquet mallets, Indian clubs, dumb-bells, ten-pins, shell plugs, treenails, etc.; handles for small tools, brushes, hammers, hatchets, picks, axes, mauls, shovels, etc.; long handles for brooms, rakes, hoes, forks, etc.

Illustrated and descriptive matter on your requirements in wood turning lathes will be mailed on application.

THE DEFIANCE MACHINE WORKS

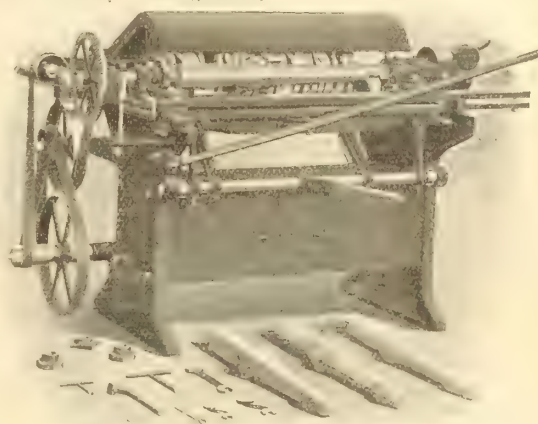
DEFIANCE, OHIO
NEW YORK

U. S. A.
LONDON



32" Variety Turning Lathe

18" Copying Lathe



You Have Paid for an Installation of Chapman Double Ball Bearings

in Your Factory over and over again, BUT—

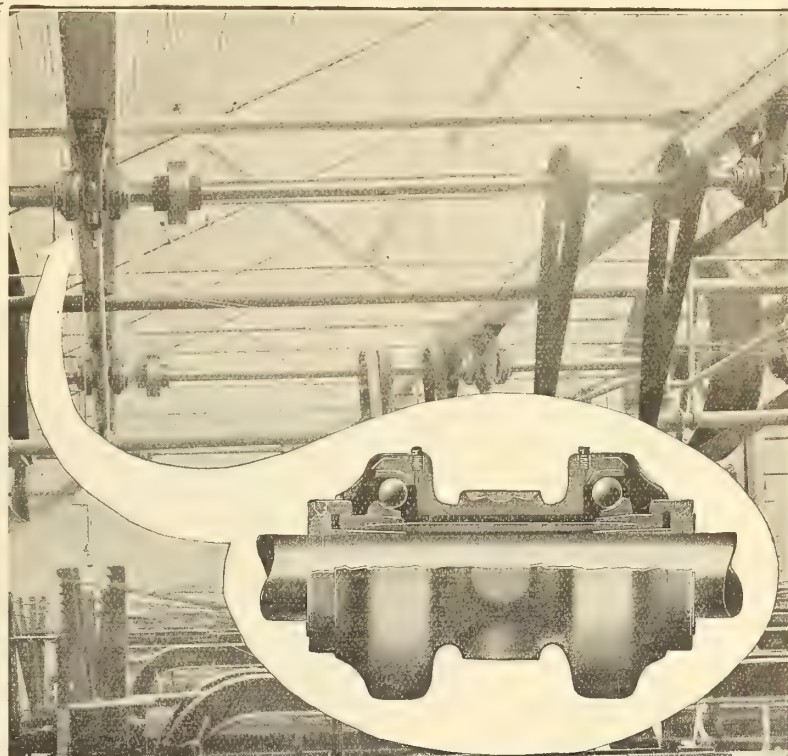
HAVE YOU GOT THEM?

Ordinary line shafting wastes 15 per cent. to 60 per cent. of power.

Line shafting equipped with Chapman Double Ball Bearings will eliminate about 75 per cent. of the friction, thus averaging a total saving of from 15 per cent. to 30 per cent.

Chapman Double Ball Bearings fit any adjustable hanger and require oiling and attention only once a year. No extra equipment required to install.

Write to-day for full particulars



The Chapman Double Ball Bearing Co. of Canada, Limited

Toronto

339-351 Sorauren Ave.

Ontario

American Branch: The Transmission Ball Bearing Co., Inc., 32 Wells St., Buffalo, N.Y.

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Surface Planer

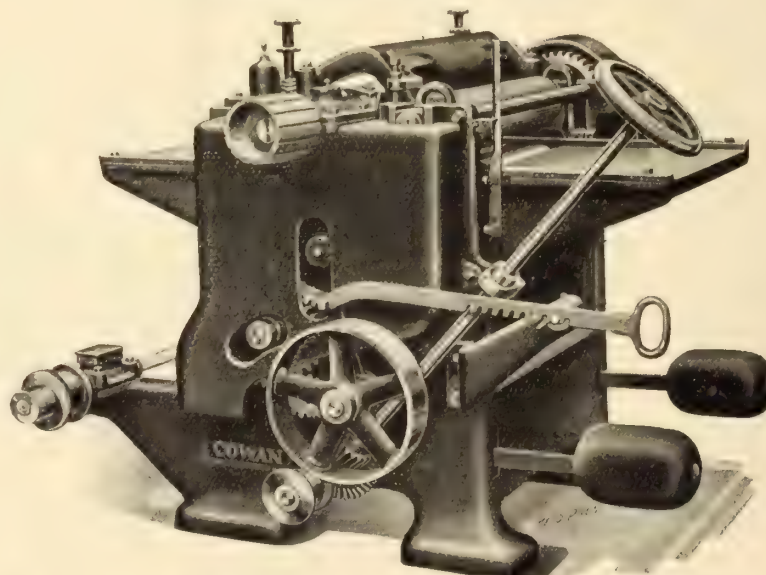
141

20", 24" and 26"

x 8"

Four rolls 4 1/2"
all driven.

The most con-
venient and sat-
isfactory Heavy
Pony Surfacers
made.



Planer and
Matchers
Surfacers
Jointers
Moulders
Shapers
Tenoners
Mortisers
Borers
Relish, Mitre and
Dado Machines
Dowel Machines
Wood Lathes
Band Resaws
Band Saws
Circular Saws
Grinders
Sanders
Wiring Machines
Clamps
Veneer Presses

COWAN & COMPANY OF GALT LIMITED
GALT, ONTARIO

"Treat your machine
as a living friend"

SAVE

In Your Veneer Room

50% of Your Present Labor Cost

Four Men to do the Work of Eight!

Keen competition is ahead of you.

To compete **successfully** your equipment should include :

A "Black Bros." Veneer Taping Machine

Let us place one with you on trial and prove—*That it will cut your Labor Cost in two.*

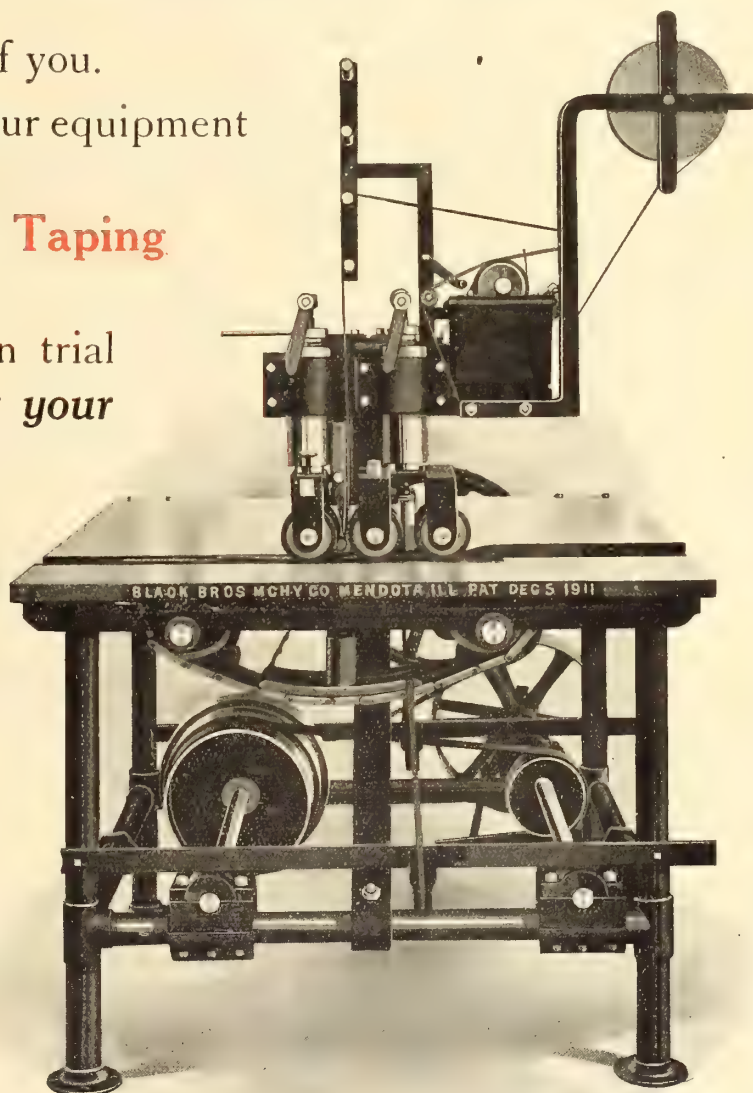
This machine will tape together all kinds of Veneer, no matter whether it be thick or thin, handling both kinds equally well.

It will use the ordinary gum tape, or it will use plain paper tape and put on its own gum or glue just before it is laid.

Built in two sizes—24 in. and 36 in.

**Ask for prices and
particulars**

WE CONTROL THE CANADIAN PATENT
ON THIS MACHINE



"Black Bros." Patented Veneer Taping Machine

The Preston Woodworking Machinery Co.

Preston, Ontario, Canada Limited

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DRY STOCK

Ready for Immediate Shipment

GUM

14,126 ft. 1" No. 1 Com. Red Gum.
 11,441 ft. 1 x 9-12" and 13-17" Gum Box.
 2,250 ft. 1" 1st and 2nds Red.
 4,000 ft. 5/4 No. 1 Com. & Selects Red.
 137,947 ft. 1" No. 2 Com.
 22,142 ft. 1" No. 3 Com. and Selects Red.
 61,242 ft. 5/4 No. 1 Com. and Selects Sap.
 144,049 ft. 5/4 No. 2 Com. Sap.
 33,047 ft. 6/4 No. 2 Com. Sap.
 14,219 ft. 6/4 No. 3 Com.
 8,000 ft. 5/4 No. 3 Com.

YELLOW CYPRESS

17,014 ft. 6/4 No. 2 Com. & Btr.
 90,492 ft. 5/4 No. 1 Common
 6,300 ft. 6/4 No. 1 Common.
 11,300 ft. 6/4 No. 2 Com.
 49,478 ft. 8/4 No. 1 Com.
 37,493 ft. 8/4 No. 2 Com.

15,012 ft. 10/4 No. 1 Com.
 4,516 ft. 10/4 No. 2 Com.

MISSISSIPPI ELM

37,116 ft. 6/4 Log Run
 39,142 ft. 6/4 No. 2 Com.
 14,241 ft. 6/4 No. 3 Com.
 1 Car 1" No. 2 and No. 3 Common
 1/2 Car 6/4 No. 2 and No. 3 Common.

8/4 DOG BOARDS—Small % 6/4

Cypress, 41,261 ft.
 Elm, 7,440 ft.

RED OAK

166,149 ft. 1" No. 3 Common.
 37,987 ft. 10/4 1st and 2nds.
 50,000 ft. 3/4 No. 3 Com.
 6,880 ft. 5/4 No. 1 Com. Qtd.
 10,000 ft. 6/4 No. 1 Com. Pl.—30% FAS
 70% White.

12,467 ft. 1" Sound Wormy Oak.
 12,192 ft. 1" 8' No. 2 Com. & Btr. Mixed Oak.

QUARTER SAWN BLACK GUM

11,421 ft. 8/4 1st and 2nds.
 19,140 ft. 8/4 No. 1 Com. and Selects.
 13,291" 8/4 No. 2 Com.

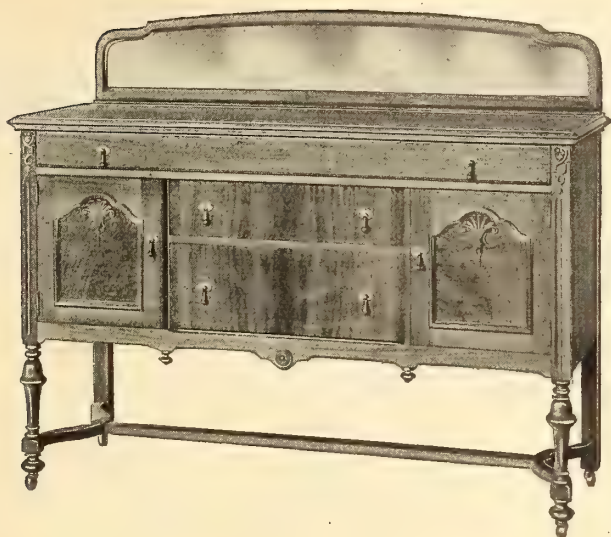
PECAN HICKORY

6,300 ft. 1" Log Run.
 1,890 ft. 6/4 Log Run.
 6,000 ft. 8/4 Log Run.
 11,550 ft. 10/4 Log Run.

LA. WHITE ASH

11,253 ft. 5/4 No. 2 Common.
 3,792 ft. 6/4 No. 2 "
 3,020 ft. 8/4 No. 2 "
 9,591 ft. 5/4 No. 3 "
 4,942 ft. 8/4 No. 3 "

ABERDEEN LUMBER COMPANY
PITTSBURGH, PA.



OUR REPUTATION

for quality Walnut has been established, and will be maintained, with the furniture manufacturers everywhere. They know that for quality service and beauty Hartzell's Walnut is yet unbeaten. For thirty-seven years we have been turning out

"Hartzell's Choice Walnut"

to meet the demands of the best of furniture manufacturers. We have studied the problems of Walnut production and have succeeded in making Walnut the most popular wood of the present day. Hartzell's Walnut is direct from the greatest Walnut territories of the United States—Ohio and Indiana.

Tell us what kind of stock you have been using, and in what grades. The chances are we can assist you materially.

We also have Veneers, Lumber, Dimension and Panels of the best quality.

Geo. W. Hartzell

PIQUA, OHIO

Red Gum Sap Gum Oak Tupelo

We carry a well assorted stock ready for immediate shipment of all Southern Hardwoods. Make a specialty of loading mixed cars of various grades and thicknesses for the factory trade. We issue a monthly stock sheet showing at a glance delivered prices on everything we have ready for shipment. If you are not receiving these lists, please write us.

P. J. Lawrence Lumber Co.

Sales Office

Syndicate Trust Bldg.

St. Louis, Mo., U.S.A.

J. V. Stimson & Co.

Manufacturers and Wholesalers Band Sawn

Hardwood Lumber and Dimension Stock

Band Mills and Yards

OWENSBORO, KY.

Permit us to figure on your needs in Plain and Quartered Red and White Oak, Ash, Poplar and Walnut.

Our "Specialty" is Quality

When Dry Lumber Gets Scarce

Remember !

Our dry-kiln is at your service—500,000 feet per month capacity and 10,000,000 feet of lumber from our own band-mills to draw upon.

James E. Stark & Co., Inc.
MEMPHIS, TENN.

Bone Dry

Right now dry lumber is scarce. Here's a list of dry stock ready for prompt shipment. Remember there's 30 years' experience back of every board.

- 1 car 5/8 FAS Plain Red Oak.
- 1 car 5/8 No. 1 Com. Plain Red Oak.
- 10 cars 4/4 No. 2 Com. and Btr. Plain Red Oak.
- 1 car 5/4 FAS Plain Red Oak.
- 1 car 5/4 No. 1 Com. Plain Red Oak.
- 2 cars 6/4 FAS Plain Red Oak.
- 2 cars 6/4 No. 1 Com. Plain Red Oak.
- 1 car 8/4 FAS Plain Red Oak.
- 1 car 8/4 No. 1 Com. Plain Red Oak.
- 3 cars 10/4 FAS Plain Red Oak.
- 1 car 10/4 No. 1 Com. Plain Red Oak.

*Write for our Complete List
with Prices*

North Vernon Lumber Co.
NORTH VERNON, IND.
LOUISVILLE, KY. DYERSBURG, TENN.
Every Board Branded "NVLCO." Quality Guaranteed

Our Aim—Quality and Service that Satisfies

Some of Our Stock Now on Hand

3 M' 10/4 Common and Better Cypress.
 15 M' 12/4 Common and Better Cypress.
 7 M' 16/4 Common and Better Cypress.
 4 M' 16/4 Common and Better Plain Red Oak.
 13 M' 12/4 No. 2 and No. 3 Common Ash.
 40 M' 10/4 No. 2 and No. 3 Common Ash.
 25 M' 8/4 No. 2 and No. 3 Common and Better Ash.
 45 M' 8/4 No. 1 Common and Better Red and White Oak.
 30 M' 6/4 Common and Better Red and White Oak.
 4 cars 8/4 Common and Better Quarter-Sawed Red Gum.
 100 M' 8/4 Com. and Bet. Quarter-Sawed Red Gum, S.N.D.
 100 M' 12/4 Log Run Elm.
 50 M' 10/4 Log Run Elm.
 26 M' 6/4 Log Run Elm.
 15 M' 10/4 Log Run Rock Elm.
 30 M' 12/4 Log Run Rock Elm.
 15 M' 10/4 Log Run Sycamore.

MEMPHIS BAND MILL CO., Memphis, Tenn.

SOUTHERN HARDWOODS Dry Lumber in Buffalo for Quick Shipment

BASSWOOD				RED GUM				QUARTERED WHITE OAK			
	Clear	No. 1	No. 2		Clear	No. 1	No. 2		Clear	No. 1	No. 2
1 in.	1 & 2 Strips	Com.	Com.	1 in.	1 & 2	Com.	Com.	1/2 in.	1 & 2	Com.	Com.
1 1/4 in.	35,700	2,200	172,000	1 1/4 in.	60,300	13,200	.....	3/4 in.	5,500	.....	.....
1 1/2 in.	144,300	12,000	146,500	1 1/2 in.	8,200	9,200	.....	5/8 in.	84,500	25,400	128,600
2 in.	36,600	.....	24,800	2 in.	9,000	11,300	.....	1 in.	29,400	12,800	4,000
2 1/2 in.	20,900	.....	15,000		7,100	4,800	.....	1 1/4 in.	10,000	.....	6,400
3 in.	75,000	.....	20,900					1 1/2 in.	1,500	.....	2,000
4 in.	5,550	.....	6,500					2 in.	6,500	350	5,100
	1,300	.....	.....					2 1/2 in.	800	.....	2,700
BUTTERNUT				PLAIN RED OAK				HICKORY			
	Clear	No. 1	No. 2		Clear	No. 1	No. 2		Clear	No. 1	No. 2
1 in.	1 & 2	Com.	Com.	3/8 in.	1 & 2	Com.	Com.	1 in.	1 & 2	Com.	Com.
2 1/2 in.	15,300	35,800	19,600	3/4 in.	30,200	.....	25,400	1 1/4 in.	2,200	2,300	600
	3,000	3,000	.....	5/8 in.	97,000	.....	8,500	1 1/2 in.	.....	400	350
TENNESSEE SCENTED RED CEDAR				1 in.	220,200	2,700	10,500	1 1/2 in.	5,000	2,300	1,000
	Clear	No. 1	No. 2	1 1/4 in.	11,700	2,400	14,500	2 in.	12,350	13,600	10,700
1 in.	1 & 2	Com.	Com.	1 1/2 in.	73,900	4,300	20,200	2 1/2 in.	7,000	5,000	.....
1 1/4 in.	18,500	15,800	1,500	2 in.	38,100	.....	45,800	3 in.	400	5,580	.....
	4,400	800	.....	2 1/2 in.	23,100	.....	4,000	4 in.	200	200	.....
				3 in.	23,800	.....	8,500				
				4 in.	3,600	.....	3,900				
CHERRY				QUARTERED RED OAK				POPLAR			
	Clear	No. 1	No. 2		Clear	No. 1	No. 2		Clear	No. 1	No. 2
1 in.	1 & 2	Com.	Com.	3/4 in.	1 & 2	Com.	Com.	18 in. & up	1 & 2	Com.	Com.
1 1/4 in.	154,000	24,000	129,200	1 in.	72,200	8,300	38,800	1 in. & up	1 & 2	Com.	Com.
1 1/2 in.	3,500	.....	3,600	1 1/4 in.	500	.....	400	1 1/4 in.	16,200	36,000	11,600
2 in.	31,000	.....	17,700	1 1/2 in.	.....	550	150	1 1/2 in.	2,800	3,900	.....
2 1/2 in.	10,100	.....	17,200	2 in.	1,000	.....	7,400	2 in.	5,300	7,600	.....
3 in.	4,500	.....	800					2 1/2 in.	32,600	.....	22,000
4 in.	6,700	.....	2,300					3 in.	25,800	.....	28,000
	3,900	.....	1,200					4 in.	5,900	.....	32,600
CHESTNUT				PLAIN WHITE OAK				Stained			
	Clear	No. 1	No. 2		Clear	No. 1	No. 2		Clear	No. 1	No. 2
3/4 in.	1 & 2	Com.	Com.	3/8 in.	1 & 2	Com.	Com.	5/8 in.	9,800	34,300	2,600
1 in.	147,900	10,700	21,300	1/2 in.	23,400	.....	.....	1 in.	23,600	105,900	55,300
1 1/4 in.	88,800	1,300	10,200	5/8 in.	11,300	.....	.....	1 1/4 in.	8,600	11,600	6,000
1 1/2 in.	45,500	.....	4,000	3/4 in.	28,150	.....	21,300	1 1/2 in.	9,700	45,000	2,700
2 in.	23,200	.....	52,300	1 in.	39,900	.....	22,000	2 in.	7,000	141,500	27,500
2 1/2 in.	2,700	.....	850	1 1/4 in.	22,300	.....	13,000	2 1/2 in.	3,700	1,000	.....
3 in.	1,800	.....	1,300	1 1/2 in.	76,300	.....	17,000	3 in.	1,500	43,000	32,000
4 in.	900	.....	.....	2 in.	50,500	.....	50,400	4 in.	700	750	.....
				2 1/2 in.	49,000	.....	101,000				
				3 in.	113,800	.....	35,500				
				4 in.	54,800	.....	39,800				
					21,000	.....	1,500				

Also Large Stock of ASH, BEECH, BIRCH and MAPLE

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto

MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y.

Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY

The Story of Our Business

Chapter V.—Our Shipments

Great care is taken in the piling of our lumber. The red and sap gum is given special care with plenty of piling strips carefully placed so that the lumber will dry straight and flat. The lumber is then held until in proper condition of dryness before shipment. Much of the trouble consumers experience with gum is caused by stock being partially dry. It is our purpose to insure our customers against such troubles. Our inspectors are the best we can find. Most of them have been in our employ for years. They are carefully trained by our experienced yard foremen and ship grades strictly according to National Rules. If there is one thing we try harder than another to do, it is to give our trade good values and liberal measure. The widths and lengths of our stock are always desirable because we have the timber to produce choice stock.

Don't forget there will be a car shortage this fall. We are now feeling a slight car shortage on account of the heavy grain movement, and it will grow worse when cotton moves in the South. Lay in a good supply of stock now for your fall and winter requirements.

Wire or write us your inquiries for the following thoroughly dry stock or anything else you may need in Southern Hardwoods:—

QTD. RED GUM				PLAIN RED GUM				QTD. RED GUM			
								Sap no defect			
4 cars	4/4	No. 1	Com.	3 cars	4/4	No. 1	Com.	6 cars	5/4	No. 1	Com. & Bet.
4 "	5/4	"	"	5 "	5/4	"	"	1 "	8/4	"	"
2 "	6/4	"	"	1/2 "	6/4	"	"	2 "	10/4	"	"
				1/2 "	8/4	"	"	1 "	12/4	"	"



BELLGRADE LUMBER CO.
Manufacturers - MEMPHIS, TENN.

RED GUM

"AMERICA'S FINEST CABINET WOOD"

The really successful merchant, it matters not in what line, is he who takes the trouble to ascertain

WHAT THE PUBLIC WANTS

This is especially true in its application to the furniture manufacturer and his retailer. He *has to* study his public—or he soon will have no public.

That portion of his public which is influenced by the principles of good taste wants RED GUM furniture—Why? Because the color, grain and soft, velvety quality of this, the finest of America's cabinet woods, when handled by a master cabinet-maker, results in a thoroughly charming piece of furniture—the kind that people of nice discrimination like to have around—and want strongly enough to *ask for*. Then can YOU supply it?

Makers and dealers desiring to see samples of RED GUM, both rough and finished, are invited to correspond with us at once.

GUM LUMBER MANUFACTURERS' ASSOCIATION

1314 Bank of Commerce Bldg., Memphis, Tennessee.

Full Line of DRY HARDWOOD

4/4, to 16/4 Birch

4/4, 6/4 and 8/4 Basswood

4/4, 6/4 and 8/4 Brown Ash

4/4, 6/4 and 8/4 Red Oak

Edward Clark & Sons, Ltd.

807-9 Bank of Hamilton Bldg., Toronto

Perfection in Quality and Service

Service that is prompt and accurate is a big factor in our dealings and at the same time the acme of quality always prevails. We make a specialty of supplying Sap, Red Gum, Crating and Southern Hardwoods. Let us know your requirements in factory stock including all grades and thicknesses of Cypress, Sap, Red Tupelo and Black Gum, Cottonwood, Oak, Elm, Sycamore and Ash. We can ship immediately on receipt of your order.

Cornelius Lumber Company

ST. LOUIS, Mo., U. S. A.

"Gum of Quality" Yazoo River Red Gum

as produced by

**Thomas & Proetz Lumber
Company**

No. 3400 Hall St. St. Louis, Mo.

is carefully manufactured; soft
in texture; dark, rich in color;
and admirably suited for furni-
ture and interior trim.

Mills—Belzoni, Miss.; Catchings, Miss.
Naples, La.

If you are not buying from us, write today.

ATTENTION: "Auto Body and Furn. Manfgs."

We are one of the few firms
in the country handling

White Ash Exclusively

We sort it to meet all re-
quirements. **Tough** texture
and **Medium** texture. Can
furnish **Special Widths** and
Lengths one to four inches
thick. Write or wire when
needing WHITE ASH.

THOMPSON, KATZ LUMBER CO.

Memphis, Tenn.

Cable Address "TomKats"

IOWA BLACK WALNUT

Used in the New Pennsylvania Hotel, New York City

We believe that you will be interested in a statement recently made by the management of this hotel:—

“The fact that we have chosen Walnut as a furniture wood and for the interior trim for the largest hotel in the world, and a hotel which is designed for New York’s most discriminating hotel patrons, speaks for itself. Could we say more?”

This proves that the trend is unquestionably toward Walnut and we urge you to prepare accordingly.

We would appreciate a list of your needs.

Des Moines Sawmill Co.

DES MOINES, IOWA



AMERICAN WALNUT

The Supreme Cabinet Wood

The Eternal Youth of Walnut

Ponce de Leon came to the new world in search of the legendary "fountain of youth". He never found it but the famous cabinet makers of his time were more successful, for they were using the only wood that remains unchanging throughout the Ages. Ponce de Leon may well have planned his voyage while sitting in one of the famous leather backed Spanish Chairs of walnut, which to this day retain their eternal youth. Both Antiquity and modern scientific engineering tests have set the seal of approval on walnut as the one enduring supreme cabinet wood.

In the great war when nations, individuals and materials were given the supreme test

Walnut more than made Good

*Write for our Walnut Booklet which will be out Soon
It is interesting - and costs you nothing.*

American Walnut Manufacturers' Association
Room 425, 115 Broadway, New York.

Two Conclusive Proofs Why You Should Buy Your Lumber From Us



Examine closely the picture above, then read the following letter we received a few days ago from one of the largest manufacturers of Mouldings in the world. (Lumber for Mouldings must be absolutely flat and straight.)

"We have been using exclusively gum lumber, both sap and red, shipped by you for the last three years, and have been well pleased with its character, both as to grade and condition. The condition of same being an evidence of careful handling before shipping. We have been well pleased with the transactions which we have had with you, and will endeavor to continue using your stock as long as available."

We also manufacture Oak, Ash, Elm, and Cypress at Louise, Miss., mills. Get our prices before placing your orders and become a SATISFIED user of Gum or one of the other Southern hardwoods.

BARR-HOLADAY LUMBER CO.

GREENFIELD - OHIO

& YET AGAIN

here's proof that we are not only PULLING FOR GOOD OLD

OAK

but also for those WHO SELL IT—

IS THIS YOU?

Month by month we are working on the CONSUMER

(Your Customer)

for a big, strong

"COME-BACK"

of OAK!

Watch us!

Does your line meet the issue? If not, it can by next season.

AMERICAN OAK MFRS' ASSN.,

LET US CONSULT TOGETHER FOR THE GOOD OF ALL CONCERNED. WRITE US. WE'LL ANSWER.

ROOM 1408, 14 MAIN STREET, MEMPHIS, TENNESSEE

"The Return of the Prodigal Taste"

STILL ANOTHER OAK FURNITURE ADV. APPEARING IN THE BEST MAGAZINES IN AMERICA.

—a true story in one adv. (see below.)



"THE BASIS OF FURNITURE COMPARISONS"

The following conversation really happened once that we know of. Probably it is paralleled many times—the country over. (Perhaps by you.)

"Every time I look around our new home, dear, I am thankful to the architect for being so insistent about this OAK furniture. He said we'd have to do a lot of insisting to get really good furniture in this noble wood—and it certainly is worth all the insisting we did."

"Well, I told you we had an architect who was well-grounded in his taste and his knowledge. He said..."

Indiana

Quartered Red and White

OAK

1,000,000 feet of dry stock carried
at all times

ALSO PLAIN OAK AND ASH

We manufacture all stock carried

Evansville Band Mill Co.

FRANK M. CUTSINGER, Pres.
GEO. H. FOOTE, Vice-Pres. & Treas.
JOSEPH WALTMAN, Secretary

Mills at EVANSVILLE, Indiana

John I. Shafer Hardwood Co.

Farmers Trust Building
SOUTH BEND, IND., U.S.A.

Below is a partial inventory of the Dry
Furniture Stock which we have ready
for immediate shipment, mostly from
Indiana and Ohio.

BASSWOOD

3" FAS & No. 1 Com. 11,030'

SOFT ELM

5/8" Log Run 18,700'
1 1/2" FAS & No. 1 Com. 15,700'
2" FAS & No. 1 Com. 43,100'
2 1/2" FAS & No. 1 Com. 77,473'
3" FAS & No. 1 Com. 73,248'

HACKBERRY

2" FAS & No. 1 Com. 16,930'

POPLAR

1" FAS No. 1 & 2 Com. 32,869'
2" FAS No. 1 & 2 Com. 27,204'
2 1/2" FAS No. 1 & 2 Com. 2,148'

WALNUT

3/4" No. 1 Common 35,000'
1" No. 1 & No. 2 Com. 75,000'

PLAIN OAK

1" FAS & No. 1 Com. 38,563'
1 1/2" FAS & No. 1 Com. 18,275'
2" FAS & No. 1 Com. 228,482'
2 1/2" FAS & No. 1 Com. 94,273'
3" FAS & No. 1 Com. 162,560'
4" FAS & No. 1 Com. 64,820'

HARD MAPLE

1" FAS & No. 1 Com. 20,820'
1 1/2" FAS & No. 1 Com. 10,800'
2" FAS & No. 1 Com. 27,038'
2" FAS & No. 1 Com. 176,691'
3" FAS & No. 1 Com. 15,663'

SOFT MAPLE

2" Log Run 14,200'
2 1/2" Log Run 13,760'

Our motto, "Every Customer a Booster".

We Operate 4 Band Mills

and carry large stocks of

Quartered White Oak
Quartered Red Oak
Plain White Oak
Plain Red Oak

Ash
Poplar
Hickory
Walnut

Gum
Elm
Maple, etc.

Crating and Dimension Stock a Specialty

Can furnish you highly satisfactory
stock at right prices—TRY US.

MALEY & WERTZ

EVANSVILLE, INDIANA

HUNT, WASHINGTON & SMITH

Nashville, Tennessee

Manufacturers of
Quartered and Plain White Oak

Poplar - Ash - Chestnut
Tennessee Red Cedar
Gum and Cypress

Canadian Representative

W. R. YOUMANS

1050 College St.

Toronto, Ontario

Dry Spruce and Birch

Good Stocks, Prompt Shipments, Satisfaction

C. A. SPENCER, Limited

Wholesale Dealers in Rough and Dressed Lumber

Offices—500 McGill Building
MONTREAL - - Quebec

POPLAR GUM BIRCH

For prompt shipment we carry in stock large quantities of Rotary Cut, Sliced and Sawed Veneers and Southern Hardwood Lumber.

Send us your inquiries—our prices and service will insure future business.

Christmann Veneer & Lumber Co.

3750 N. Second St., St. Louis, Mo.

MAHOGANY WALNUT OAK

F. T. DOOLEY, President.

T. E. JONES, Secy.-Treas.

F. T. Dooley Lumber Co.
Inc.

MANUFACTURERS and WHOLESALERS
of

SOUTHERN HARDWOODS

Plain and Quartered Oak
Cypress, Gum, Ash
Soft Maple and Elm

Send us your inquiries

Memphis :: :: Tennessee

Hardwoods

We can furnish you immediately Factory Stock including all grades and thicknesses of

Walnut, Chestnut
Mahogany, Teak, Oak
Ash, Cypress

ALSO

VENEERS

Oak, Maple, Walnut, and
other Fancy Woods

The McLennan Lumber Co.

Limited

MONTREAL

American Hardwood Lumber Co.

St. Louis, Mo.

Large stock of—

**Dry Ash, Quartered Oak
Plain Oak and Gum**

Shipments from — NASHVILLE, Tenn.,
NEW ORLEANS, La., and BENTON, Ark.

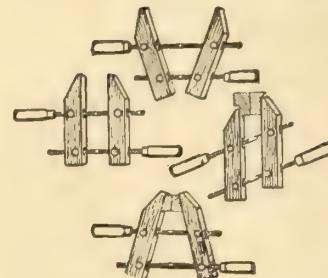
Adjustable Clamp Company

216 N. Jefferson St., Chicago, U.S.A.

Manufacturers of the

"JORGENSEN"

the Original
Adjustable Steel
Spindle Clamp



Adjustable to any position. Well made to give the service. Efficient in every way they are bound to win your approval.

If you cannot buy them from your Jobber write us direct.



Band Mill and Yards, Memphis Plant

We Desire to Emphasize the Fact That All Stock Listed is Bone Dry and Ready for Immediate Shipment, with the Exception of Items Marked * which are Shipping Dry.

PLAIN RED OAK

*35M' 4/4 1s and 2s
 *80M 5/4 1s and 2s
 75M' 6/4 1s and 2s
 50M 8/4 1s and 2s
 12M 10/4 Com. and Bet.
 110M 11/4 Com. and Bet.
 117M 12/4 Com. and Bet.
 25M 15/4 Com. and Bet.
 *50M 4/4 No. 1 Com.
 150M 5/4 No. 1 Com.
 60M 6/4 No. 1 Com.
 50M 8/4 No. 1 Com.
 14M 5/4 No. 2 Com.
 75M 6/4 No. 2 Com.
 100M 6/4 No. 2 & 3 Com.
 60M 4/4-8/4 No. 3 Com.

CEDAR

4M' 4/4

COTTONWOOD

8M' 4/4 1s and 2s
 4M 4/4 Common
 3M 9-12" Box Boards
 2M 13-17" Box Boards

CYPRESS

4M 4/4 Common
 2M 6/4 Com.

4/4 LOG RUN WALNUT

5M' (No. 1 Com.
 (No. 2 Com.

QRT'D RED OAK

1M' 6/4 1s and 2s
 2M' 4/4 No. 1 Com.

QRT'D WHITE OAK

*30M' 5/4 1s and 2s
 *40M 5/4 No. 1 Com.
 8M 6/4 No. 1 Com.
 1M 6/4 No. 1 Com.
 8M 6/4 No. 2 Com.
 2M 8/4 No. 2 Com.

C. & B. PLAIN RED GUM

80M 6/4 Com. and Bet.
 15M 4/4 1s and 2s
 50M 4/4 No. 2 Com.

C. & B. QRT'D RED GUM

6M' 8/4 1s and 2s
 100M 6/4 Com. and Bet.

PERSIMMON

3M' 4/4 Log Run

GUM BOX BOARDS

20M 9-12

QTD. SAP GUM

2M' 10/4 No. 1 Com.
 2M 12/4 No. 1 Com.
 14M 10/4 No. 2 Com.
 11M 12/4 No. 2 Com.
 65M 8/4 Com. and Bet.

ASH

7M' 5/4 1s and 2s
 10M 8/4 No. 1 Com.
 1M 10/4 No. 1 Com.
 10M 4/4 No. 2 Com.
 55M 6/4 No. 2 Com.
 20M 5/4 No. 3 Com.

PLAIN WHITE OAK

*15M' 5/4 1s and 2s
 2M 10/4 Com. and Bet.
 38M 11/4 Com. and Bet.
 1M 12/4 Com. and Bet.
 7M 15/4 Com. and Bet.
 *50M 5/4 No. 1 Com.
 10M 6/4 No. 1 Com.
 100M 8/4 No. 1 Com.
 18M 10-12/4 No. 1 Com.
 4M 4/4 No. 2 Com.
 25M 6/4 No. 2 Com.

PLAIN SAP GUM

90M' 4/4 No. 2 Com.
 200M 5/4 No. 1 Com.
 60M 5/4 No. 2 Com.
 185M 6/4 No. 2 Com.
 30M 8/4 No. 2 Com.
 15M 5/4 No. 3 Com.
 7M 12/4 No. 3 Com.

LOG RUN ELM

37M' 6/4
 10M 5/4-6/4 No. 3 Com.
 14M 6/4-8/4 No. 2 Com.

HICKORY

15M' 6/4 No. 3 Com.
 1M 10/4 No. 3 Com.

TUPELO

7M' 4/4 1s and 2s
 5M 6/4 1s and 2s
 4M 4/4 Common

We Are Now in Position to Manufacture Quarter Sawn Red Gum, Sap, No Defect in Thicknesses of 6/4 to 12/4 Inclusive

Wire your order at our expense

"DIRECT FROM PRODUCER TO CONSUMER"

GAYOSO LUMBER COMPANY

MEMPHIS, TENNESSEE

St. Francis Basin Hardwoods

DRY STOCKS AVAILABLE FOR QUICK SHIPMENT

Tennessee Aromatic Red Cedar

DELIVERED PRICES AND DESCRIPTIONS CHEERFULLY FURNISHED

Oak Timbers Cut to Order

SAP GUM

	Feet
4/4" 1st and 2nd Quartered	9,000
4/4 No. 1 Common Quartered	14,000
6/4 1st and 2nd Quartered	5,000
4/4 1st and 2nd, 13-17 Pl.	60,000
4/4 1st and 2nd, 7/12 Plain	35,000
4/4 No. 2 and 3 Common	300,000
5/4 No. 2 and No. 3 Common	15,000
6/4 No. 1 Common and Better	20,000
6/4 No. 2 and No. 3 Common	150,000
8/4 No. 1 Common	2,500

PLAIN RED GUM

	Feet
4/4" 1st and 2nd	75,000
4/4 No. 1 Common	250,000
4/4 No. 2 Common	50,000
6/4 1st and 2nd	50,000
6/4 No. 1 Common	100,000
6/4 1st and 2nd	50,000
6/4 No. 1 Common	100,000
6/4 No. 2 Common	15,000

QUARTERED RED GUM

	Feet
4/4" 1st and 2nd	100,000
6/4 No. 1 Common	2,000
8/4 No. 1 Common	14,000
10/4 1st and 2nd	3,000
10/4 No. 1 Common	1,500
12/4 1st and 2nd	15,000
12/4 No. 1 Common	8,000

FIGURED RED GUM

4/4" 1st and 2nd Plain	12,000
4/4 No. 1 Common Plain	8,000
6/4 No. 1 Common Plain	6,000
4/4 1st and 2nd Quartered	14,000
10/4 1st and 2nd Quartered	9,000
12/4 1st and 2nd Quartered	2,500

PLAIN RED OAK

	Feet
4/4" 1st and 2nd	12,000
5/4 No. 2 Common	9,000
6/4 1st and 2nd	2,500
6/4 No. 1 Common	20,000
6/4 No. 2 Common	12,000
8/4 No. 2 Common	4,000

QUARTERED RED OAK

	Feet
3/4" Common and Better	3,000
4/4 No. 1 Common	15,000
4/4 No. 2 Common	5,000

PLAIN WHITE OAK

6/4" Common and Better	30,000
6/4 No. 2 Common	35,000
10/4 Common and Better	3,500

QUARTERED WHITE OAK

4/4" No. 2 Common	5,000
4/4 Strips, No. 2 and Better	20,000

MISCELLANEOUS OAK

	Feet
4/4" No. 2 and S. W.	7,500
4/4 No. 3 Common	75,000
5/4 No. 3 Common	5,000

SOFT ELM

	Feet
4/4" No. 2 Common and Better	100,000
4/4 No. 3 Common	25,000
5/4 No. 2 Common and Better	150,000
5/4 No. 3 Common	3,000
6/4 No. 2 Common and Better	100,000
6/4 No. 3 Common	50,000
8/4 No. 2 Common and Better	50,000
(Elm cut to special order)	

SOFT MAPLE

	Feet
5/4" No. 2 Common and Better	5,000
16/4 No. 2 Common and Better	37,000

MISCELLANEOUS

4/4" Shop and Better Cypress	6,000
4/4 Mill Run Locust	4,000
4/4 No. 3 Ash	1,000
5/4 No. 3 Ash	4,000
6/4 No. 3 Ash	7,000
4/4 L. R. Cottonwood	2,000
4/4 Mill Run Persimmon	5,000
4/4 L. R. Black Gum Plain	20,000
4/4 L. R. Black Gum Quartered	8,000

Tennessee Aromatic Red Cedar in straight carlots or mixed with hardwoods.

Prompt, courteous and efficient service at all times -Try us.

GEO. C. BROWN & COMPANY

Band Mills, Proctor, Ark. and Cosgrove, Ark. Main Office, Memphis, Tenn.

Canadian Representative: M. E. Cummings, 814 Richmond Ave., Buffalo, N. Y.

Guaranteed Delivery has Been our Best Asset

Following is dry, band sawn stock, of our own manufacture. May we serve you?

ASH		SYCAMORE		PLAIN RED OAK		6,000' 1½ in. No. 2		QUARTERED WHITE OAK	
25,000'	1 in. No. 1 Common	40,000'	2 in. No. 2 Common & Bet.	8,000'	½ in. No. 1 Common	10,000'	2 in. 1 and 2	12,000'	¾ in. No. 1 Common
12,000'	1 in. No. 2 Common	55,000'	3 in. No. 2	5,000'	½ in. No. 2 Common	20,000'	2 in. No. 1 Common	3,000'	¾ in. No. 2
3,000'	1½ in. 1 and 2			2,000'	¾ in. No. 1 Common	18,000'	2 in. No. 2	15,000'	2½ in. No. 1
9,000'	1½ in. No. 1 Common	CYPRESS		15,000'	1 in. 1 and 2	15,000'	2½ in. No. 1	15,000'	2½ in. No. 2 Com.
22,000'	1½ in. No. 2 Common	10,000'	1 in. Shop	50,000'	1 in. No. 1 Common				
7,000'	1½ in. Sound Wormy	PLAIN SAP GUM		15,000'	1 in. No. 2 Common	QUARTERED WHITE OAK		12,000'	¾ in. No. 1 Common
4,000'	1½ in. No. 1 Common	4,000'	¾ in. 1 and 2	35,000'	1½ in. 1 and 2	12,000'	¾ in. No. 2	3,000'	¾ in. No. 2
8,000'	1½ in. No. 2 Common	40,000'	¾ in. No. 1 Common	50,000'	1½ in. No. 1 Common	15,000'	1 in. No. 1	20,000'	1 in. No. 2
4,000'	2 in. Sound Wormy	2,000'	¾ in. 1 and 2	50,000'	1½ in. No. 2	15,000'	1 in. No. 2	15,000'	1½ in. 1 and 2
		40,000'	¾ in. No. 1 C., % No. 2 C.	90,000'	2 in. No. 1	15,000'	1½ in. No. 1 Common	5,000'	1½ in. No. 2
COTTONWOOD		75,000'	1 in. 1 and 2	90,000'	2 in. No. 2	5,000'	1½ in. No. 2 Common	3,000'	2 in. 1 and 2
12,000'	1 in. 1 and 2	75,000'	1 in. No. 1 Common	90,000'	2 in. Sound Wormy	WALNUT		5,000' 1 in. No. 1 Common	
15,000'	1 in. No. 1 C., % No. 2 C.	75,000'	1 in. No. 2 Common	35,000'	2½ in. No. 1 Common	6,000'	1½ in. No. 1	6,000'	1 in. 3.3½ in.
9,000'	2 in. No. 1 C., % No. 2 C.	15,000'	1 in. Wide Box Boards	32,000'	2½ in. No. 2	4,000'	1 in. 4.5½ in.	15,000'	1 in. No. 1 C., 2-3½ in. wide
ELM		7,000'	1 in. Wide Panel	7,000'	3 in. No. 1			FACE QTD. WHITE OAK STRIPS	
8,000'	¾ in. No. 2 Com. & Bet.	10,000'	1½ in. 1 and 2	3,000'	3 in. No. 2	5,000'	1 in. 2.2½ in.	Sap No Defect	
16,000'	1 in. No. 2	40,000'	1½ in. No. 1 Common			6,000'	1 in. 3.3½ in.	SOUND WORMY OAK	
80,000'	2 in. No. 2	5,000'	1½ in. 1 and 2	QUARTERED RED OAK		4,000'	1 in. 4.5½ in.	5,000'	¾ in.
90,000'	2½ in. No. 2	3,000'	1½ in. No. 1 Common	5,000'	1 in. No. 1 Common	15,000'	1 in. 1 and 2	3,000'	¾ in.
90,000'	3 in. No. 2	30,000'	1½ in. No. 2	6,000'	1½ in. No. 1	12,000'	1 in. No. 1 Common	35,000'	1 in.
20,000'	2½ in. No. 2 Common	40,000'	2 in. No. 3	5,000'	2 in. No. 1	15,000'	1 in. 1 and 2	40,000'	1½ in.
15,000'	3 in. No. 2	15,000'	2½ in. No. 2			30,000'	1 in. No. 1 Common	50,000'	2 in.
TUPELO GUM		15,000'	3 in. No. 2	PLAIN WHITE OAK		25,000'	1½ in. No. 2	POPLAR	
40,000'	Log Run			5,000'	¾ in. No. 1 Common	12,000'	2 in. No. 1 Common	Sap No Defect	
PLAIN RED GUM		QUARTERED RED GUM		15,000'	1 in. 1 and 2			2,000'	1 in. Wide Box Boards
15,000'	1 in. 1 and 2	Sap No Defect		12,000'	1 in. No. 1 Common	1,000'	1 in. 1 and 2	1,000'	1 in. 1 and 2
75,000'	1 in. No. 1 Common	4,000'	1 in. 1 and 2	12,000'	1 in. No. 2	2,000'	1 in. No. 1 Common	2,000'	2 in. 1 and 2
45,000'	1½ in. No. 1	6,000'	1½ in. No. 1 Common	15,000'	1 in. 1 and 2	2,000'	2 in. 1 and 2	25,000'	2 in. No. 1 Common
40,000'	1½ in. No. 1	9,000'	1½ in. No. 1	30,000'	1 in. No. 1 Common				
QUARTERED RED GUM		90,000'	2 in. 1 and 2	25,000'	1½ in. No. 2				
25,000'	1-7/16 in. No. 1 Common	90,000'	2 No. 1 Common	12,000'	2 in. No. 1 Common				
20,000'	1½ in. 1 & 2, % No. 1 C.	90,000'	2½ in. 1 and 2						
75,000'	2 in. 1 and 2	90,000'	2½ in. 1 and 2						
90,000'	2 in. No. 1 Common	90,000'	2½ in. No. 1 Common						
40,000'	2½ in. No. 1	90,000'	3 in. 1 and 2						
60,000'	3 in. No. 1	90,000'	3 in. No. 1 Common						
9,000'	4 in. No. 1								

MAY BROTHERS

MILLS and OFFICE

Canadian Representative: C. BEUMER, Guelph, Ont.

MEMPHIS, TENNESSEE

Stock of Black Walnut Lumber

Ready for Prompt Shipment

July 1, 1919

Thickness	1sts & 2nds 6-10"	1sts & 2nds 10-14"	1sts & 2nds 14" and up	1sts & 2nds 6-7 ft.	1sts & 2nds 4-5½ ft.	No. 1 Selects	No. 1 Common	No. 2 Common	Clear Strips	Clear Face
1/2 inch	70450	.....	.....	2100	.....	2100	63200	44200	.....	.....
5/8 inch	21760	.....	.....	2700	.....	3600	75700	78900	.....	.....
3/4 inch	45250	5200	.....	1500	1050	3300	48800	39600	.....	.....
4/4 inch	119900	.....	2500	7200	6000	149900	315700	618600	.....	.....
5/4 inch	24600	7200	1000	1200	1200	7100	37200	51200	1000	.....
6/4 inch	12100	4000	800	500	200	3800	113300	87700	600	.....
8/4 inch	13100	7400	900	250	100	5800	36700	104600	1200	.....
10/4 inch	11800	.....	.....	500	300	4400	159400	20100	.....	.....
12/4 inch	6900	.....	.....	.....	.....	.....	27400	3600	.....	.....
16/4 inch	5800	.....	.....	.....	.....	.....	6300	1300	.....	.....

We can also furnish Mexican Mahogany, White Ash, Yellow Poplar, Cherry and Plain and Quartered White Oak

The Kosse, Shoe & Schleyer Company

Eastern Branch
Baltimore, Md.

Main Office and Band Mill
Cincinnati, O.

I have the following stock for immediate shipment

- 1 Car 2 in. and 3 in. Hard Maple.
- 1 " 2 in. and 3 in. Soft Elm.
- 1 " 2 in. Canadian White Oak.
- 1 " 1 in. and 2 in. White Ash.
- 1 " 1 1/4 in. Basswood.
- 1 " 1 in. Basswood.
- 1 " 2 in. Canadian Chestnut.
- 3 " 1 in. Spruce Crating.
- 5 " 5/8 in. Spruce Crating.

Besides the above stock I can supply anything in Oak, Gum, Chestnut and White Oak from 1/4 in. to 4 in. West Virginia stock either plain or quarter sawn. Try a car of my West Virginia Plain White Oak and Chestnut.

Excelsior and Wood Wool always on hand in Kitchener.

Write, Wire or Phone Your Inquiries

PERCY E. HEENEY

202 Weber Chambers, KITCHENER, ONT.

BLACK WALNUT

**Large Stock ready for immediate
shipment, also Well Assorted
Stocks at our Yards and Mills**

in West Virginia and Kentucky

OAK

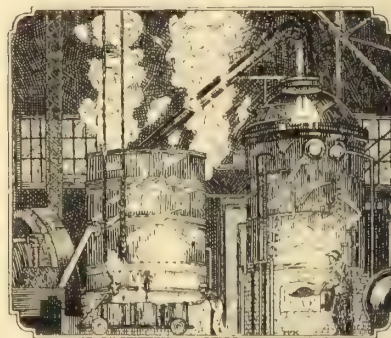
**Maple, Hickory, Chestnut
Basswood and Poplar**

Prices and stock list on request

Burns & Knapp
Lumber Company
CONNEAUTVILLE, PA.

Wood Turpentine

(MADE IN CANADA)



THE Canadian Wood Turpentine—made at our mills at La Tuque, P.Q., is an excellent diluent and solvent and contains no free rosin.

This Turpentine is made by an improved laboratory process from Canadian woods and its distinctive odor clearly indicates that it is a different product from that given by the older methods of distillation.

*Further and complete information
gladly sent upon request.*



**BROWN
CORPORATION**

Sales Office:

56 St. Peter Street
Quebec, P.Q.

Hardwood Dowels

Plain, Straight and Spiral Grooved



"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co.
Orillia, Ontario Limited

Sawmills at Zebra and Orillia, Ont.
Cable Address: "Special," Orillia, Can.

Holly Ridge Lumber Co.

Incorporated

MAIN OFFICE LOUISVILLE, KY.

This Company markets only the products of its own Band Mills located at

HOLLY RIDGE, LA.
MONROE, LA.
MEEKER, LA.
ST. LANDRY, LA.

These mills are sawing logs removed from the lands of this Company, owned by it in fee simple.

It is our policy to make high grades and to ship our customers exactly what they buy, and in no instance do we mix the grade.

These mills are producing Gum, Ash, Elm, Oak and Cypress.

A consumer placing business in the hands of this Company is assured of having direct shipments from the producer to the consumer, and that the business will be conducted on a high plane in every respect.

RANCH OFFICES

KANSAS CITY, MO.
Geo. H. Temple, Mgr. 204 R. A. Long Bldg.

GRAND RAPIDS, MICH.
Howard A. Shead, Mgr., 601 Grand Rapids Bank Bldg.

J. H. Bonner & Sons

Memphis, Tenn.

Mills:
Jonquil and Ruffwood, Ark.

Manufacturers

Band Sawn Hardwood Lumber

Write or wire for prices on
Gum, Oak, Elm, Etc.

Southern Hardwoods

Our mills now producing high grade stock, well manufactured, including:

Poplar, Chestnut, Basswood
Buckeye, Hickory, Red and
Sap Gum, Plain and Quartered Red and White Oak.

Agricultural and other special purpose stock, Oak Planking, Railway Material, Heavy Timbers, in fact almost anything in the line of Hardwood Lumber.

Buskirk-Rutledge Lumber Co.
Cincinnati, Ohio.

OAK

Plain and Quartered
Uniform Color—Soft Texture

Poplar, Ash and other Hardwoods

We have 35,000,000 feet dry stock—all of our own manufacture, from our own timber grown in Eastern Kentucky

Prompt Shipments

The **Mowbray & Robinson Co.**
(INCORPORATED)

Manufacturers

Office: CINCINNATI, OHIO

MILLS

Quicksand, Ky.; Viper, Ky.; West Irvine, Ky.

Canadian Representative :

M. E. CUMMINGS, 814 Richmond Ave., Buffalo N. Y.

The Hyde Lumber Co.

Band Mills : LAKE PROVIDENCE LA.

Southern Office : MEMPHIS, TENN.

Bank of Commerce Bldg.

Northern Office : SOUTH BEND, IND.

MANUFACTURERS

Plain Red Gum

Quartered Red Gum

Plain Sap Gum

Quartered Sap Gum

Cottonwood, Cypress

Tupelo, Ash, Elm, Oak

CHARLES O. MAUS

Canadian Representative

H. W. Darby Hardwood Lumber Company

Manufacturers of

Hardwood Lumber

Red and Sap Gum a Specialty

Gum, Oak, Tupelo, Poplar
Ash, Elm, Cypress

Rooms 1531-33 Bank of Commerce & Trust Bldg

MEMPHIS, TENN.

Mills at :

Kosciusko, Miss.
Greenwood Miss.

Money, Miss.
Ruleville, Miss.

“The Cabinet Wood Superior”

Nature has given cabinet makers and interior trim workers many ideas to realize their ambitions of producing designs of character.

Nature has also given the “Cabinet Wood Superior” to assist in applying these designs.

“The Cabinet Wood Superior” Is, Without Question American Black Walnut

The soft tone, deep lustre and delicate shades of rich brown color of American Black Walnut places it above all others.

Consider well the class of wood you use and we venture the assertion, your decision will be

American Black Walnut “It’s Classy”

Walnut Exclusively—All Grades and Thicknesses.

Pickrel Walnut Company

St. Louis, Missouri

SOUTHERN HARDWOODS

Well Manufactured from Good Timber

Unexcelled Quality and Service

For twenty-five years Paepcke Leicht quality hardwoods have satisfied the most exacting users in the wood-working industries of the United States, Canada and Europe.

Strict uniformity of inspection and quality year after year, with a truly superior service, have consistently kept old customers on our books.

Your interest, also, lies where you can get the most in satisfaction and value.

We Specialize in Oak and Gum

Paepcke Leicht Lumber Company

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Conway Building
111 West Washington Street
CHICAGO, ILL.

BAND MILLS

Helena, Ark.
Blytheville, Ark.
Greenville, Miss.

ROBT. BURY & CO., Canada

LIMITED

Hardwoods and Veneers

LUMBER

Mahogany (250,000 ft. in stock, all kinds)	Birch
Walnut	Basswood
Qtd. White Oak	Maple
Plain Red Oak	Beech
Poplar	Elm
Gum	Ash
And all U. S. A. Hardwoods	And all other Canadian Hardwoods.

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English Oak	Walnut, Basswood, Maple	
Teak Ash Cherry	SLICED	
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CANADIAN WOODWORKER and Furniture Manufacturer

A Monthly Publication of Trade News and Practical Information, reaching the factories producing Interior Finish, Doors, Sash, Flooring, Boxes, Aeroplanes, Furniture, Pianos, etc.

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Vol. 19

Toronto, June, 1919

No. 6

Closer Co-operation Needed for the Betterment of the Industry and the profitable Handling of Export Orders

The inquiries recently made by the Australian Government for quotations on large quantities of sashes, doors and other building materials, and the prospects of many inquiries of a similar nature from the different European countries, emphasize the greater need of closer co-operation among the Canadian woodworkers and the formation of an organization to handle this and other orders that will be forthcoming.

That such an organization is required and would be of immense benefit to the industry as a whole is so apparent that it need not be dwelt on at any great length. Not only could export trade be handled more advantageously through an organization and more business be secured for Canadian manufacturers, but there are many questions and problems in connection with our domestic relations that could be solved by intelligent, whole-hearted co-operation.

An order calling for 500,000 doors and 800,000 sashes is so large that we doubt if there are any firms in Canada who would care to tackle it. If there are, is it fair that one or several firms should have a virtual monopoly of the export orders that are bound to be placed in Canada? We think not, and the logical way for all to secure their just share of all these orders is through co-operation and organization.

One organization for the whole of Canada would be so cumbersome and unwieldy that it would be doomed to failure almost before its inception. It would be necessary for the woodworkers in every province to get together and organize and then these associations could form a central body, which would deal on all questions

effecting the whole industry. For the economical handling of the export trade the central association could appoint an export committee, who could use the machinery of the British Columbia, Nova Scotia or New Brunswick associations for shipping the material either west or east, or could establish separate export branches at Vancouver and St. John or Halifax. One of the first moves of such a central organization should be the working out of standard sizes and designs in sashes, doors, etc., and stock patterns in mouldings and trim, and also the establishing of a fair price on all such standard material—a price that would be satisfactory to the majority of our woodworkers.

The Canadian woodworking industry would then be in a position to go to large buyers in Europe, Asia,

Bad Telephone Service

The cost of Bell Telephone service in Canada has been increased, but so far as Toronto is concerned there is no evidence that this service has improved. The cold fact is that the service is bad. These are busy days and business men cannot afford to spend the time frequently required to get in touch with customers. There is delay in getting the operator's attention, a very big percentage of the calls are wrong numbers, many conversations are interrupted and the administration, generally, seems to be very loose.

These are times when people expect "service" and for the most part are ready to pay for it. However, there is no disguising the fact that there is a very general feeling that we are paying for a satisfactory service and getting a decidedly unsatisfactory one. Is the management inefficient? If so, it is due the Canadian public that the weak points be strengthened up without further delay.

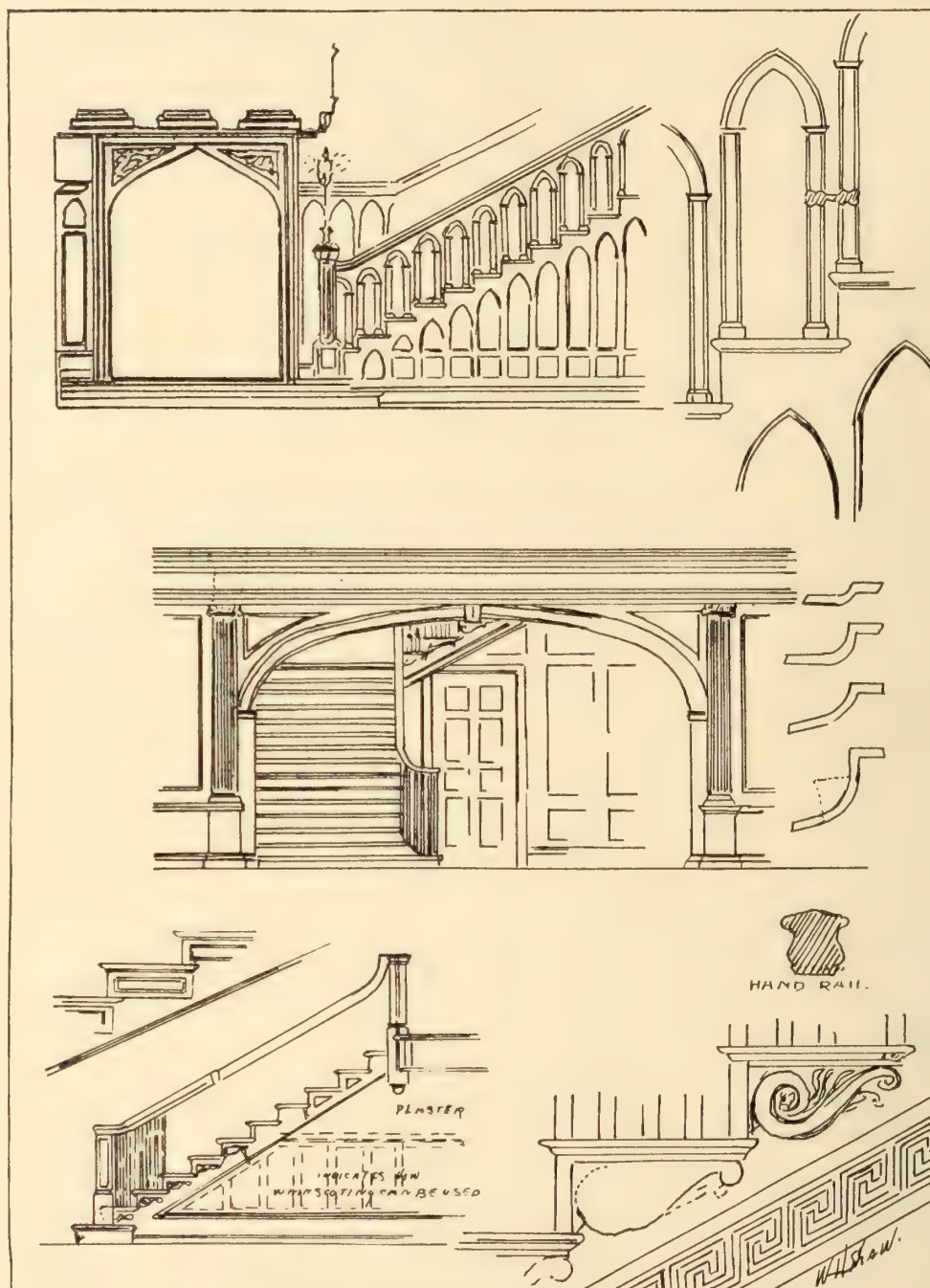
Australia and South America and say, "Here are our samples with sizes and specifications and we can furnish you with any quantity desired at the following prices." In this way additional orders could be secured that under ordinary circumstances would go to centres better prepared than our own woodworkers to execute them. Other advantages accruing from closer co-operation would be the elimination of cut-throat competition, the establishment of fair prices, the inauguration of a system of uniform cost accounting. In addition, the weight of the organization as a whole could be brought to bear on the equitable adjustment of unfair freight rules and rates, complicated lien laws and other matters of vital interest to the industry.

Woodworkers bestir yourselves and prepare to take the fullest advantage of opportunities that are opening up on all sides.

Ideas and Suggestions for Interior Trim—No. 5

Design and Location of Stairs Important Items—Determining Amount of Head Room—Tables for Risers and Pitch

By W. H. Shaw



Showing treatment of stair and hall as a whole

The stairway, originally considered alone for its utility and placed in the form of a spiral stair in some out of the way corner, is now carefully designed as an important feature of the home and located in the most prominent part of the house. As stairway designing and construction is not confined by precedent or tradition to any one form or style, a broad field is opened to the de-

signer in which to make the best of his inborn originality; an opportunity which he rarely fails to avail himself of, sometimes presenting a stairway of beautiful proportions and design, and at other times a hopeless incongruity.

Stairway building is in fact an art by itself, not alone in its design but also in its construction, requiring considerable skill in joinery as it is

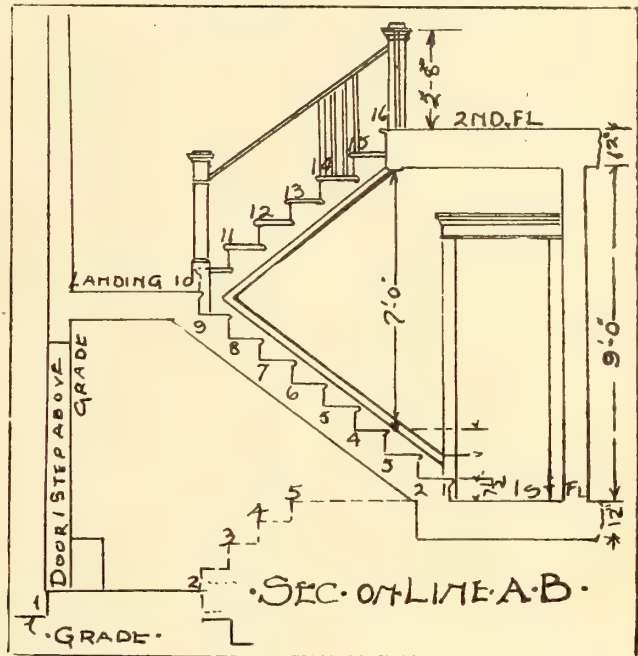
usually built of many light and small parts all joined together with concealed bracing and much use of glue. This calls for highly trained labor and has developed a special class of joiners who make stair building their only work.

Planning and Locating a Stairway

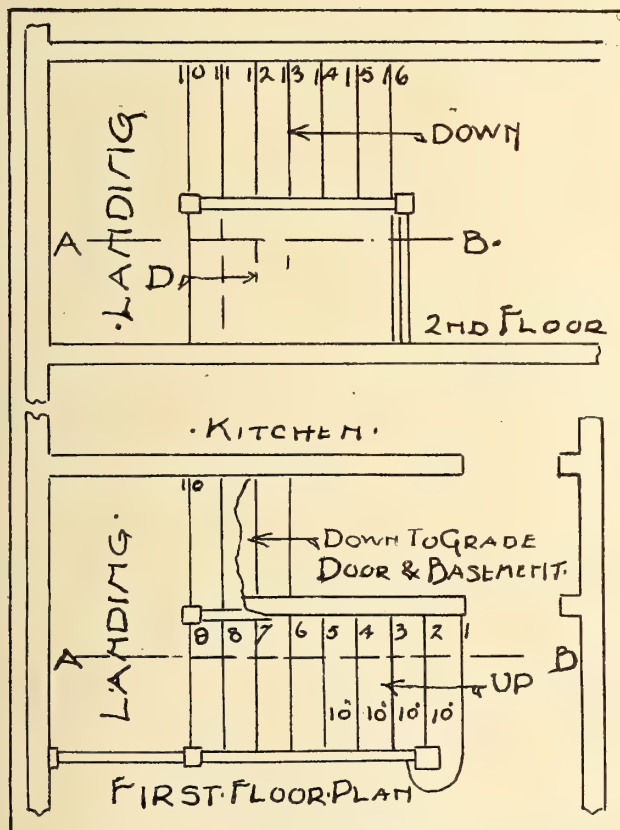
The first consideration in stair building is the plan, second the number and relation of risers and treads which will be dealt with at some length later on, and the last but very important consideration, the design. The location of the stair depends somewhat upon the requirements of the family. If the house is sufficiently large to warrant a back stair the principal stair may be located without reference to the rear portion of the house. Some families are so situated that the stair may ascend from the living room without thought of inconvenience. In the average house it will be best to reach the stair soon after entering the house and without passing through any room. It will be an advantage if the kitchen is located adjacent that a combination stair may be arranged in such a manner that one may pass unobserved to the main stair. If the stair to basement can be arranged below with a door at the grade, an almost ideal arrangement is obtained. If possible the stair should be far enough back when it lands on the second floor to allow the full frontage across the house for floor space. It is at the front that rooms and light are of most value.

For the economy of space and the mere pur-

pose of passing from one floor to another, the old spiral stairway handed down to us from times remote will serve the purpose admirably. But in the present day it has almost become an axiom, that windows of any sort should never be includ-



Section through stairway



Plan of stair and landings

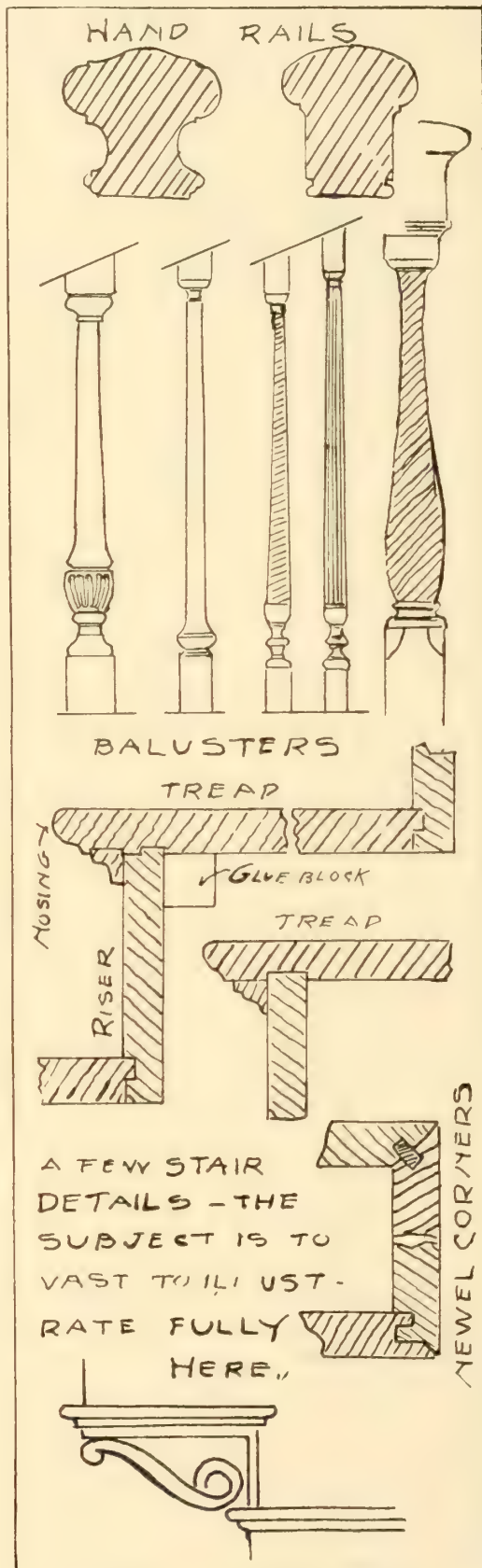
ed in a stairway of any pretensions. The usual plan of a stairway is one run and no landing, two runs with one landing, or three runs with two landings, making in the second and third cases one and two right angle turns.

One run of stairs from floor to floor is not advisable as it makes the ascent tedious work unless more space is allowed the stair for wide treads than can usually be afforded in the average house. "Three runs and two landings" makes an ideal ascent, but this usually necessitates an unsightly prominence of the underside of the last run unless it is skillfully built in. One principal run, a broad landing and a short final run makes an ideal stair. This always allows of considerable space under the landing that can be used as a coat closet, a lavatory, a repository for books, or a roomy nook.

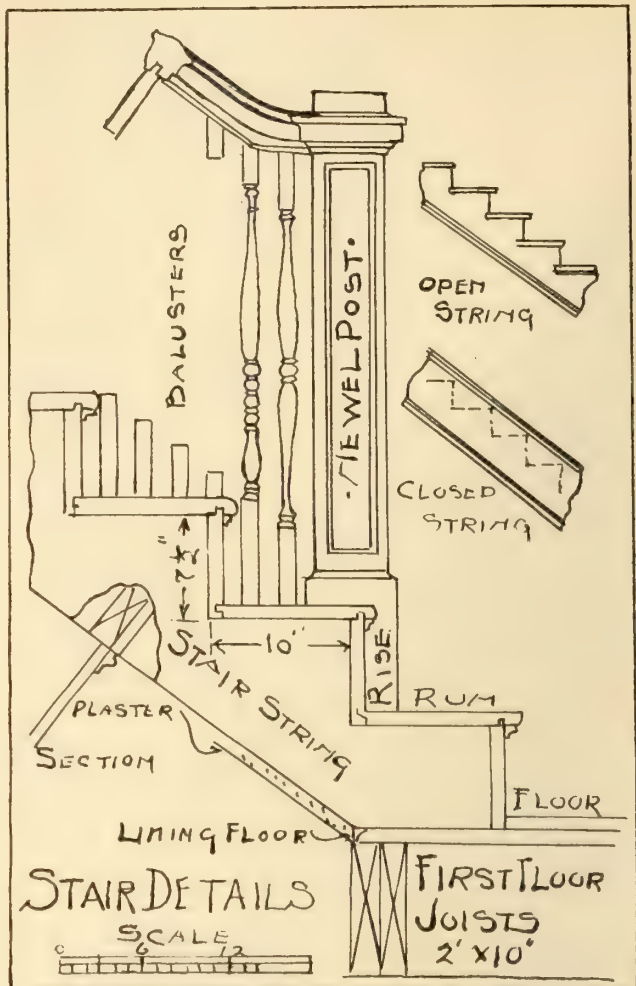
Design Stairs to Fit the House

The principal features embodied in a stairway design, should be characteristic of the established style of the house. In fact a well designed stairway may be said to be practically a harmonious composition of Gothic, colonial, or classic detail as the case may be. The accompanying sketch illustrates this point well, the vertical or pointed Gothic being used prominently in the panelled wainscoting and balustrade, the newel post also being distinctly of Gothic design. Each tread carries a miniature Gothic open window, the pointed arches sustaining the railing with an

appearance of substantiality and support. This is also true of the wainscoting under the stair. The subject is too vast to illustrate fully out-



Details of construction and designs of balusters



Stair details, showing open and closed string

side of an extensive volume, but enough is given to aid one in further research. The stair hall is necessarily considered with the stairway. A panelled wainscoting being the principle feature of decoration. This wainscoting is usually from 30 inches to four feet high with the usual baseboard at the bottom and a neat cap of moulding at the top.

There are many ways of finishing the ends of the open stair treads. The brackets were originally carved out of wood by hand, a tedious and expensive task. Today for a small sum they can be obtained cast from a mould in composition, a durable material that makes possible many beautiful things in a modest home. This design can be modified somewhat to a simpler form as shown in another sketch.

Spiral Handrail Very Effective

Newels can be solid or built up, many sided, square or turned, some are plain and have hand carved ornaments. The handrail starting in a spiral with baluster following is very effective, but more expensive than a simple newel.

Balusters admit of a great variety of design, either square, or in the better class of work turned with square block top and base. The caps on

the balusters should step up with each baluster in the same degree of rise as the rail, but the base block and mouldings at the base should run horizontally on each step, some part of each being on a line with the step above. They are made from seven-eighths inch to one inch and three-quarters in diameter for the usual stairs, but sometimes larger or elaborate work. The spacing is optional, but in the best colonial homes there are three balusters to a tread of ten inches and four to a trend of twelve inches.

The construction of the handrail is a complex subject. A few suggestions will suffice here. The top of the rail should be smooth and rounding to allow the hand to pass over it easily. It should also project some at the top to enable one to grip it with the thumb and fingers. The handrail

der ordinary conditions the requirements of surrounding features of the plan should yield as far as possible to allow for ample horizontal space for the stair in order to avoid a steep ascent.

Rules for Calculating Pitch of Stairs

To avoid this condition there are several rules. Begin with the height of the story usually 9 feet. Add to this the actual thickness of lining and finished floor, the ceiling plaster and the height of the usual 10 in. joists of the second floor, 12 inches, a total of 10 feet from top of first floor to top of second floor or 120 inches. Divide this by $7\frac{1}{2}$ inches which is an ordinary and comfortable height to rise at each step and the result is just 16 risers in a total of 10 feet.

The most common rule used being the English of not less than seventeen or more than eighteen inches, as the sum total of riser and tread, thus a rise of seven inches would call for a tread of ten or eleven inches. The German rule is to make their quotient between seventy and seventy-five inches. The French rule is to take twice the height of the riser and add to it the tread, keeping the sum between twenty-four and twenty-five. The lower the rise is, the broader will be the step to obtain the most comfortable proportion for comfort.

It is safe to say, however, that the rise should not be less than six and one-half inches, nor more than seven and one-half inches from tread to tread, and that the tread should be from ten to twelve inches for all house stairs of importance. The treads referred to above are from face to face of risers. Sizes given are not meant to include the nosing which projects an inch or so over the riser. The table of risers accompanying this article will be found convenient for finding the number of risers required for a certain rise in a given height.

Space Occupied by Stairs

There is always one less tread than riser. Therefore, with 16 risers there will be 15 treads equal to 150 inches at 10 inches each or 19 feet 6 inches. This means that a stair with a total rise of 10 feet, composed of $7\frac{1}{2}$ inch risers and 10 inch treads will have a horizontal direction of 12 feet 6 inches. This much space is needed for the stairs alone. If landings are introduced, the whole stair will occupy more space but the actual amount occupied by the steps themselves remains unchanged.

There should be at least 7 feet above the step where the floor comes nearest to the head in passing up or down. With the thickness of the joint, flooring and plaster added, (equal to 1 foot) This means we must descend 8 feet equal to 13 risers, which at $7\frac{1}{2}$ inches each will be 8 feet $1\frac{1}{2}$ inches. Only 12 treads will be required for this distance, equal to 10 feet at 10 inches each, apply this by measuring 10 feet from the top riser of the stair back on a horizontal direct level with the second floor. At this point the stair well, as it is called, can be floored over.

No	FEET INCH	FEET INCH	FEET INCH	FEET INCH	FEET INCH	FEET INCH	FEET INCH
1	0-6 $\frac{1}{2}$	0-6 $\frac{3}{4}$	0-7	0-7 $\frac{1}{4}$	0-7 $\frac{1}{2}$	0-7 $\frac{3}{4}$	0-8
2	1-1	1-1 $\frac{1}{2}$	1-2	1-2 $\frac{1}{2}$	1-3	1-3 $\frac{1}{2}$	1-4
3	1-7 $\frac{1}{2}$	1-8 $\frac{1}{4}$	1-9	1-9 $\frac{1}{2}$	1-10 $\frac{1}{2}$	1-11 $\frac{1}{4}$	2-0
4	2-2	2-3	2-4	2-5	2-6	2-7	2-8
5	2-8 $\frac{1}{2}$	2-9 $\frac{3}{4}$	2-11	3-0 $\frac{1}{4}$	3-1 $\frac{1}{2}$	3-2 $\frac{3}{4}$	3-4
6	3-3	3-4 $\frac{1}{2}$	3-6	3-7 $\frac{1}{2}$	3-9	3-10 $\frac{1}{2}$	4-0
7	3-9 $\frac{1}{2}$	3-11 $\frac{1}{4}$	4-1	4-2 $\frac{3}{4}$	4-4 $\frac{1}{2}$	4-6 $\frac{1}{4}$	4-8
8	4-4	4-6	4-8	4-10	5-0	5-2	5-4
9	4-10 $\frac{1}{2}$	5-0 $\frac{3}{4}$	5-3	5-5 $\frac{1}{4}$	5-7 $\frac{1}{2}$	5-9 $\frac{3}{4}$	6-0
10	5-5	5-7 $\frac{1}{2}$	5-10	6-0 $\frac{1}{2}$	6-3	6-5 $\frac{1}{2}$	6-8
11	5-11 $\frac{1}{2}$	6-2 $\frac{1}{4}$	6-5	6-7 $\frac{3}{4}$	6-10 $\frac{1}{2}$	7-1 $\frac{1}{4}$	7-4
12	6-6	6-9	7-0	7-3	7-6	7-9	8-0
13	7-0 $\frac{1}{2}$	7-3 $\frac{3}{4}$	7-7	7-10 $\frac{1}{4}$	8-1 $\frac{1}{2}$	8-4 $\frac{3}{4}$	8-8
14	7-7	7-10 $\frac{1}{2}$	8-2	8-5 $\frac{1}{4}$	8-9	9-0 $\frac{1}{2}$	9-4
15	8-1 $\frac{1}{2}$	8-5 $\frac{1}{4}$	8-9	9-0 $\frac{3}{4}$	9-4 $\frac{1}{2}$	9-8 $\frac{1}{4}$	10-0
16	8-8	9-0	9-4	9-8	10-0	10-4	10-8
17	9-2 $\frac{1}{2}$	9-6 $\frac{3}{4}$	9-11	10-3 $\frac{1}{4}$	10-7 $\frac{1}{2}$	10-11 $\frac{3}{4}$	11-4
18	9-9	10-1 $\frac{1}{2}$	10-6	10-10 $\frac{1}{2}$	11-3	11-7 $\frac{1}{2}$	12-0
19	10-3 $\frac{1}{2}$	10-8 $\frac{1}{4}$	11-1	11-5 $\frac{3}{4}$	11-10 $\frac{1}{2}$	12-3 $\frac{1}{4}$	12-8
20	10-10	11-3	11-8	12-1	12-6	12-11	13-4
21	11-4 $\frac{1}{2}$	11-9 $\frac{3}{4}$	12-3	12-8 $\frac{1}{4}$	13-1 $\frac{1}{2}$	13-6 $\frac{3}{4}$	14-0

Table of risers, gives number of risers for a given height

should be from four to five inches in the section and three to four inches broad. The distance from top of rail down to top of step taken on a line with face of riser should be not less than twenty-eight inches nor more than thirty-two inches, thirty-two is best.

Different Lengths for Treads

Stair treads should be one and three-eighths inches thick. The usual width of stairs is three feet to five feet from the wall. Rear stairs can be two feet six inches wide. All enclosed stairs having walls in each side should have a hand rail on one side (both sides is better) supported on iron brackets.

The most important point in planning a stair is the pitch or relation between the risers and treads. The pitch of a stair is often restricted to as small a space as possible to save room, but un-

Scientific Planning—A House for \$1,000

The Secret of Building Low Cost Houses Through Proper Designing

By R. S. Whiting, Architectural Engineer

"You can build this house for \$1,000," and "this house will cost \$1,000," are familiar expressions, but until we have been through the actual operation of building a house, we cannot fully appreciate the meaning of them both.

It can be done, but how can the best results be accomplished? Shall we construct a cheap flimsy affair which may have to be rebuilt in the near future, or shall we apply some grey matter, good material and hard work and produce a real house? A house which may be added to from time to time, without detracting from its beauty is always an asset.

The architect referring to some recent residential work and analyzing actual costs is able, by comparison, to determine approximately the cost per square or cubic foot. By this means he is able to say about how many square feet in floor area can be allotted for a house not to exceed \$1,000. Assuming that a one storey house, with a cellar under a portion only, costs \$2,000, and by computation is found to contain 1,400 square feet—a house to cost \$1,000 must contain, therefore, approximately 700 square feet when built in

be divided into a living room and dining room, or a combination of both. A more homey and commodious effect may be obtained by making one large room out of the living and dining room. Since every farmer seems to feel the need of a back entrance, a porch is shown attached to the kitchen, combined with a built-in ice box. Plenty of glass in the southwest corner of the living room gives a sun parlor effect, which makes this part of the house cheerful and attractive.

An entry from bath to kitchen enables the farmer to reach the bath without tracking dirt through the other portion of the house. The bath is also convenient to the bedrooms.

To keep the cost of the house within the stipulated sum, the fireplace, shown in dotted lines, in the living room may be temporarily omitted, but easily constructed in the future. Exterior blinds may be omitted for the same reason.

The cellar may be excavated under part of the house only, for an area of about 20 x 24 feet for heater, storage of wood, coal and vegetables, but may be excavated the entire area at a very slight additional cost. When a second storey is added, a stairway both up and down, might replace the present entry and bath room, and the plumbing fixtures moved to a new location over the kitchen. The cellar can be entered temporarily through a bulkhead conveniently located outside.

Economical details of construction are important in keeping down cost. The detail drawings shown here indicate a simple method of frame construction, the stock for which the lumber dealers can furnish at a considerable saving over other methods. The following is a list of the lumber sizes required:

- 2 x 6 sill.
- 2 x 8 floor joists 12 ft. lengths.
- 2 x 6 ceiling joists 12 ft. lengths.
- 2 x 4's doubled for the plates.
- 2 x 6 rafters.
- 2 x 4 ft. lengths for walls.

The 2 x 4 uprights in the wall framing in 8 ft. lengths, but the plates can be built up of shorter lengths by breaking joints and spiking securely. This type of framing prevents rapid spread of fire in the walls and also prevents vermin from working up through the walls from the cellar.

Economy can be used in the selection of finished floors by using shorter lengths since such floors can be purchased at a considerable reduction over long lengths. The labor in laying shorter lengths has been found to be no more and in many cases less. Often-times enough pieces can be selected from several bundles of flooring having a particular grain or color and used as a border around the room, laying the remainder in the centre space, which is usually covered by a rug.

Careful consideration should be given the selection of windows as certain standard sizes can be procured at a much less cost than others, the size of windows to a great extent governs the cost of frames and interior finish. Two light windows, using 24, 26 and 28 inch glass are most practical and more economical. Small



A \$1,000 house that is attractive and planned right

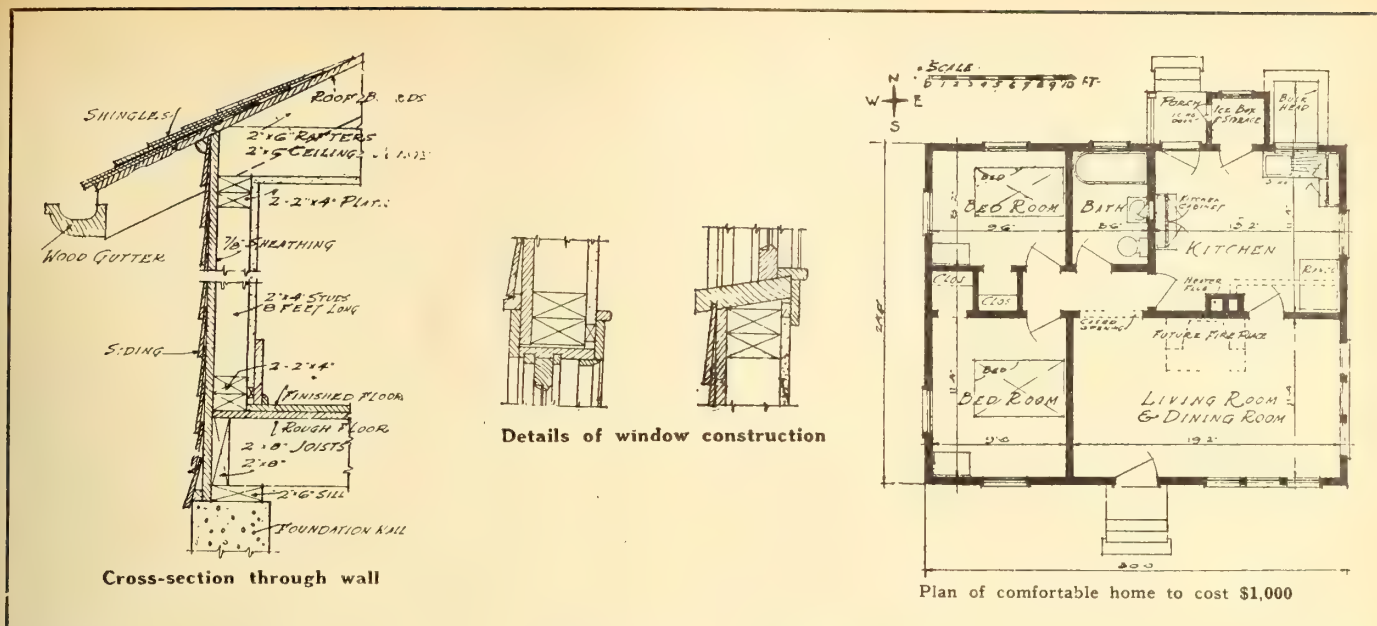
the same locality and under similar conditions, with like materials.

The retail lumber merchant tells us that joists in 12 foot lengths are more economical than those in 10 foot lengths; therefore, we determine on twice this length for the total width of our house or 24 feet. Dividing 700 square feet by the determined width we have approximately 30 feet for the length. Starting with a floor area, therefore, of 24 x 30 feet, the plan must be arranged to accommodate the necessary things and more, if possible.

There should be at least two bed rooms, one double and one single; a kitchen; bath; and a living room, dining room, and porch—or some economical combination of the latter three.

By dividing the plan lengthwise in two bays, each 12 feet in width for economy of floor framing, one dimension of our rooms is determined. The kitchen at the rear and north side occupies a space 11 ft. 4 in. x 13 ft. 2 in., then the bath adjoining. The 9 ft. 6 in. x 11 ft. 4 in., allowing space for closets and entry.

The remaining space, 11 ft. 4 in. x 19 ft. 2 in. is to



window lights make a most attractive exterior, but increase the cost somewhat.

Interior doors with four panels, or five cross-panel doors, make an attractive appearance and can be purchased at less cost than others. Plain trim, with back band, made up of light stock, such as indicated on the detail drawing, is easy to apply and reasonable in cost.

The exterior designs is given good scale by the use of wide siding and the use of well proportioned windows, which should be selected from the stock sizes carried by the dealer. Shingles make a most attractive exterior design also, and when stained some some carefully selected color, harmonize with rural surroundings. Always paint exterior as well as interior woodwork; its appearance is improved and life extended. A brush coat of creosote given the sills and such other woodwork as may come in contact with the foundation walls or earth will prevent possible decay. Lap siding is ordinarily placed smooth side out, but if placed rough side out and given a brush coat of creosote it is made most attractive and is more lasting and less costly.

A house such as this can be built for about \$1,000, in most localities, but should the cost appear to be running over this amount, some of the less important items may be temporarily omitted until such time as their installation is warranted and they become necessary. (In Western Canada, the cost will be higher owing to the increased cost of material and labor.)

Where quarters for farm help are not what they should be, and better and more modern living accommodations are necessary, this plan will supply the need. If the cottage is to be used only for sleeping purposes, and the help boarded in the farm house, the kitchen will answer as an additional bedroom, thus giving the cottage a capacity for accommodating at least five men.

The Mattison Machine Works, manufacturers of wood-working machinery, Rockford, Ill., have recently moved their New York sales office to 703 World's Tower Building, 110 West 40th Street. Mr. J. V. Parks continues in charge and will be pleased to serve those interested in Mattison machines at his new location.

Doors, Sashes, Floorings and Linings for Soldiers' Homes in Australia

The Acting Canadian Trade Commissioner at Melbourne, Australia, gives particulars regarding the doors, sashes, floorings and linings required in Australia for soldiers' homes. Mr. Bartlett says:—

It is estimated that within ten years fully 75,000 homes, at an expenditure of possibly £50,000,000, will have been built under the provisions of the Act.

This large building project will give rise to an enormous demand for lumber and other material which Canada is in a position to supply. Canadian exporters of lumber are advised that representations were promptly made to the commissioner under the War Service Homes' Act in regard to the anticipated requirements. Quotations on deliveries spread over a number of years are asked for:—

(a) 50,000 standard four-panel doors (6 feet 8 inches by 2 feet 8 inches by 1½ inch, of which 60,000 will be required within the coming twelve months.

(b) 120,000 sashes—within twelve months—6 feet by 2 feet 10 inches by 1½ inch.

(c) 350,000,000 superficial feet T. and G. flooring, dressed on one side, size 4 inches by 1 inch, of which 70,000,000 feet will probably be required within the next twelve months.

(d) 350,000,000 superficial feet of T. and G. lining, dressed on one side, 4 inches by ½ inch or 4 inches by ¾ inch, of which 70,000,000 feet will be required in the first twelve months.

Obviously, the yearly requirements will substantially increase as the scheme develops, hence the commissioner's estimate is for smaller deliveries within the first year.

The principal ports for which delivery of the timber is required are, in order of importance, Sydney, Melbourne, Brisbane, Perth, Adelaide, and Hobart.

The magnitude of the Australian soldiers' scheme will be apparent to Canadian timber companies—especially those in British Columbia—and to shipowners. Quotations from Canada are assured of sympathetic consideration from the Commonwealth authorities.

The world will give a living to those who earn it.

How Others are Securing Results

Tags Kept Above Saws Enable Edgings and Cuttings to be Worked Advantageously—
Checking List for Foremen—Working on Items that are Low on Stock Sheet

What's my idea of successfully operating a furniture factory? Why, turning out the biggest amount of work that the machinery will stand with the least expense—quality, of course, not to be sacrificed. A writer in the "American Furniture Manufacturer" in telling how W. L. Loucks successfully operates the plant of the Udell Works, Indianapolis, Ind., describes some of the methods.

Fig. 1 is a "Stock Tag," one of these being issued to cover the order for each lot of stock that goes to make up a complete music cabinet, or whatever is being made. These tags start with the stock as it is issued from the stock room, and they do not leave it until each particular set of stock is all put together in the finished product. Not only does this tag prevent errors in sawing, make "following up" the stock an easy matter, but it saves in the following way: Tags for various sizes and kinds of stock are strung out over the saws. Hence, a man cutting a certain size of stock and finding the "left-over" lengths of good size can often look over the tags which show what stock is in demand, and thereby will be able to find a place to use the "left-over" pieces from his cutting. These pieces, ordinarily, would be thrown away as scraps, or else would have to be gathered up and put away in the stock room. Many dollars, much lumber, to say nothing of time and effort is saved by the use of this tag. As each lot of stuff indicated by a certain tag is sized, the stuff is piled on a truck attached to it, and it starts on its journey through the factory.

Fig. 2 is a "Checking List," one of which is issued to each foreman. Upon it is listed all the pieces that go to make up a certain article, and that must pass

a lot of stuff, or for "losing" it. This check list has certainly been a great thing, and Mr. Loucks says it not only absolutely prevents any stock from being lost and, hence, delaying operations, but it inspires foremen to do their work faster so they will not keep the next department waiting for material to work on.

Fig. 3 is another system that speeds production. It is a record of stock on orders received, and is made up fresh by Mr. Loucks every two weeks or so, and a copy is handed to each foreman. A careful perusal of the list will show its good points to any experienced factory superintendent better than I can explain them, I think, but it may not be amiss to mention in a word or two just how the list works out, as explained to me.

The items on which stock is lowest, each time the list is made out, are placed as near the top as possible. Hence, when the foreman of a certain department finds

RECORD OF LOW STOCK ON ORDERS RECEIVED TO DATE OF April 25/19

CATALOG NO.	FINISH	AMOUNT	ORDER NO.	QUANTITY	TOTAL	OVER	LOCATION	DATE	TIME
432	oak	250	109	260	528	278		5-10/15/24/31	
1449	mah	100	94	47	172	226		5/3 5/8 5/19 5/21	
57	oak	100	37	0	200	200		cut X 5/2 5/9	
650	oak	50	127	90	253	163		5/10 x72 4/28	
1416	mah	150	16	0	153	153		cut X 4/38	
1403	oak	100	371	63	196	133		5/1 5/3 5/19 5/30	
404	mah	200	80	205	315	110		cut X 5/10 5/20	
650	mah	150	122	191	293	107		4/26 X 5/10 5/20	
1404	oak	100	83	51	152	101		cut X 5/10 5/20	
636	mah	100	84	51	149	98	c. b	cut X 4/30	
1404	mah	150	82	50	146	96		5/1 5/3 5/19 5/31	
416	oak	50	127	0	87	87		cut X 5/26 6/1	
1449	oak	50	96	12	94	82		5/1 5/9 5/20 5/30	
404	"	200	81	227	309	81		cut X 5/6 5/12	
1416	"	50	18	0	81	81		cut X 5/26 6/30	
649	mah.	50	65	54	135	81		5/2 5/10 5/24 6/20	
433	oak	100	79	11	91	80		cut X	
438	oak	100	105	275	354	79		no tag X -	
650	mah	100	15	25	103	78		cut X 5/8 5/20	
416	"	100	332	7	86	78	oub	cut	
67	oak	100	134	113	199	76		5/2 5/10 5/21 5/31	
649	"	100	330	23	34	71	oab	cut	
60	"	120	12	0	12	12		5/2	

List showing most needed requirements

work slack, by referring to the list or "rush sheet," he can easily find what goods are most needed, and can have his men turn in and produce these items. For instance, if the cutters go to their foreman and ask "what next?" he just grabs the low-stock list, finds what is needed most and orders stock cut accordingly. And so it works through all departments.

Red Gum for Furniture

The above is the title of a booklet issued by the Gum Department of the American Hardwood Manufacturers' Association. This booklet is handsomely illustrated with cuts designed to show the wide application of red gum and the great beauty of its figure. The illustrations include a grand piano, bedroom suite, numerous odd pieces of bedroom furniture; dining-room furniture, including buffet, chairs, china cabinet, extension table and serving table.

The Red Gum department have issued two books which will be sent upon request. The titles are Red Gum Facts and Technical Information about Red Gum Address the American Hardwood Manufacturers' Association, Memphis, Tenn.

A reformer is a man who wants everyone to be better than he is.

Stock Tag

Date: DEC 13 1918 Piece No: 3

Catalog No: 1403 Order No: 370

Amount: 600

Name of Piece: Chest

Length: 31 7/8 Width: 20 3/8 Thickness: 3/4

Double Veneer

Tags for efficient follow up system

Checking List

Date Issued: NOV 5 - 1918 Amount: 200

Catalog No: 498 Order No: 321

1 Top 26

2 Bottom 27

3 Side 28

4 Back 29

5 Front 30

6 Feet 31

7 Back Pcs 32

8 Side Pcs 33

9 Feet 34

10 35

11 36

12 37

through that foreman's department. As he receives and does whatever he has to do with each bunch of stock he checks the list in the way indicated, and passes the material along. The result is that all material on its way through the factory can be easily traced and located. Furthermore, the foreman of each particular department can avoid the responsibility for holding up

Are We Making the Most of Our Opportunities?

Ontario Government
(Canada)

163, Strand, London, W.C.

June 23rd, 1919.

Editor, "Canadian Woodworker."

Among my other activities I am making inquiries into the market for wood manufacturers, such as joinery work, turned goods and all wares made largely or primarily of wood. There has been more or less discussion of this business at home, and to my knowledge a certain amount of export trade was done between Canada and this country; but, so far as I can learn, it has always been of minor volume and conducted in too casual a fashion. At the present moment an undoubted opportunity exists. It would be most unfortunate if we were not to take full advantage of the present situation, and I therefore bring this subject to your notice as one warranting some publicity in your paper; thereby I am sure you can do the situation much good. Furthermore, I would suggest that if you know of any other means of giving the matter publicity, you pass the good word along. Heretofore this trade has been very largely controlled by Sweden, Germany and the United States. At the present moment all goods of this kind are either prohibited from importation outside of the Empire, or are subject to licenses which are difficult of securing. Quite apart then from any sympathetic attitude this gives a substantial preference to Canadian sources of supply, a preference which I repeat it would be unfortunate if Canadians in general, and Ontario in particular, did not take advantage of. Furthermore, it seems particularly opportune at this hour, when so many of our industries in the woodworking lines are establishing themselves after unsettlement of the war period. I have received several tangible indications of interest by parties here in developing this trade with Canada. Among these I have before me a letter from Mr. F. A. Perrin of Winther, Perrin & Company, 52 Great Eastern Street, London, following an interview which Mr. Perrin had with me. In this letter Mr. Perrin confirms his purpose of going to Canada within the next week or ten days, to pursue the renewal of some old relationships existing before the war, and the establishing of new ones.

My conviction is that we cannot be too aggressive in getting a full measure of the possibilities of this trade, because if we fail to do our part to meet the demand, it must sooner or later turn to other sources for satisfaction, and a decided opportunity be lost to us.

Yours very truly,

(Signed)

H. C. Manbert,

Timber Commissioner for Ontario.

Large Demand for Woodenware

A British firm of timber importers, with headquarters in London, England, write us as follows:

"We are large importers of all kinds of woodenware, but prior to the war unfortunately we found it necessary to get our supplies from Scandinavian and American firms, though we have done considerable business with Canadian manufacturers. We realize the fact that Canada could produce articles to compete with foreign countries, and we see no reason whatsoever, why we should not get all our supplies from Canada alone. Therefore, the writer is leaving Liverpool on June 21st, with a view to not only arranging for contracts with concerns we have previously dealt with, but also interesting other manufacturers in the articles we wish to import. There is undoubtedly at the present time a fine opportunity for Canadian manufacturers to supply this market, and if they would only specialize in the export trade and go to the necessary trouble, vast business could be done."

We are interested, in purchasing the following items:

Dowels; broom handles, made from soft wood, such as basswood spruce; ash hay fork handles; ash rake

handles; hickory and maple pick handles; hickory and ash hammer handles; hickory sledge hammer handles; clothes pins; wash-boards; maple skewers; chairs; household utensils made in wood; practically anything in the turnery and woodenware lines.

In addition there is an active demand for many other items, such as step-ladders, rakes, pails, garden barrows, washing machines, ironing boards, wooden trays, paint brush handles, etc., etc.

Anyone interested in getting in touch with the representative of the above firm may obtain the desired information from the publishers of this journal.

Woodenware Required in Britain

The "Machine Woodworker," a British publication, states that the buyer of a very large distributing house, which deals in woodenware, when asked about the demand for various articles, replied: "Washboards are overstocked, a large consignment of Canadian clothes pegs are on the way. We want pastry boards, housemaid bins, wooden spoons, coat hangers and step-ladders. Broom handles—we are well supplied with the common kind but not with the best class. A fair stock of dowels are on hand, but we expect a heavy demand.

Can Value of Technical Schools be Increased?

Work of Classes Misjudged—Not Sufficient Inducement to Take Up Woodworking—
—Instruction Covers Wide Field—Constructive Criticism Needed.

By Geo. E. Cole, Instructor Technical School

The scarcity of skilled help for our woodworking factories is a source of serious thought on the part of those really interested in our business, and if we can find any way to do so we must remedy this condition.

The evening classes held at the Technical Schools for the purpose of enabling woodworkers to improve themselves do not seem to be patronized by those who need them most, consequently our only hope seems to be in training the boys. How this can best be accomplished is a good subject for discussion. Personally I believe our only hope is by the aid of the schools.

There is a lot of dissatisfaction over the results so far attained by the schools, and no doubt there is room for improvement, but whether they can ever be made to satisfy the expectations of some of their critics is hard to say. Many people seem to think that a class ought to turn out every year a certain number of boys, or young men, who will take their places as capable hands in the local factories, just as the factory itself turns out the articles it is equipped to manufacture. In theory this is no doubt to some extent, the idea of the the classes but there is a lot of difference between making wood into chairs, buffets, etc., and training boys to become cabinet-makers or machine hands.

Class of Embryo Woodworkers Unlikely

It is possible that in some places a whole woodworking class may consist of boys who have decided to adopt cabinet making as a profession, but I think such a class is very rare. Woodworking is only one of the industrial subjects taught, and the boys are likely taking either printing, plumbing, electricity, metal-working or some other subject in addition to drafting and woodworking. Consequently is a class of twenty boys probably less than half have any idea of becoming woodworkers.

The term woodworker covers a wide field and includes carpenters, as well as the various hands employed at the sawmills; box, sash and door, furniture, carriage and piano factories, etc. It would be obviously unfair to insist that the boys all be trained for any one of these, and it would be impossible to train them thoroughly for all. Some of us have been learning for twenty-five years and over, and are still learning. The only thing to do with the boys is to lay a foundation on which a practical training can be built. We have all come across men who have been at the trade all their life, and, although seemingly intelligent, never seem to amount to very much. Is not this, in many cases, because they did not get started properly?

Schools Run for Benefit of All

Some employers seem to think that the schools are run for their benefit, for the purpose of keeping their factory supplied with help; but in my idea they are for the benefit of the whole community and the boy's own interest has to be considered as being very important. If the boy at school is given an idea of the various branches of woodworking, he can select for himself the one that appeals to him most, and is more likely to stay with, and make progress at, his selection, if he has some knowledge of the other branches beforehand than he would be otherwise. What particular branch he

will choose depends on many things. For instance, the average boy—not being a fool—is hardly likely to choose the branch that is poorest paid, but will naturally try to get the best returns for his labor, just as the manufacturer does for his product.

Possibly right here is the cause of the shortage of skilled help. If the pay were more attractive we might get the intelligent boys who are now choosing entirely different, and to our mind less congenial, but at the same time much more remunerative, lines of work.

The present system of training boys in the schools may be far from perfect but I think a lot of the criticism to which it is subjected is due to lack of knowledge of the subject. Whatever may be said against it there is much to be said in its favor. It is not, as some people seem to imagine, a "makeshift," nor did it, like Topsy, "Jest grow." It is the outcome of serious thought and research on the part of those responsible, and they are profiting by the experience of older countries.

All Industrial Courses Include Woodworking

In Ontario, training in woodworking is valued by the authorities so highly that every boy taking an industrial course has to spend a certain amount of time weekly during the first year in this class. It is considered that the training, in handling tools, accuracy in working, etc., received is of great educational value and will be of good service to him no matter what trade he may eventually take up. I think this will show that woodworking classes are far from being neglected.

We must not judge the success of the schools by comparing the results with those attained by the apprenticeship system. In our case several men had a hand in training us—and we learned something from each. In the school one man has to teach a whole class of boys. We worked 50 or 60 hours weekly for several years; these boys only have a few hours weekly for a few months. On the other hand, of course, we often had to do work we knew how to do, while the boys should be learning something fresh all the time, but even at that it is not fair to expect the same results.

Outline of Work Covered

Perhaps the following outline of woodworking course, obtained from local school, will explain the present system better than any words of mine.

First year, woodworking.

Reading of working drawings.

Problems in constructional work with principal joints used in carpentry, joinery, and cabinet-making.

Designing, constructing and finishing of some piece or pieces of furniture.

Construction, use and care of tools, grinding and sharpening, saw filing.

Growth, structure and classification of trees, properties of woods used for cabinet-making and building construction.

Cutting and seasoning of lumber; prevention of twisting, warping, and checking of sawn lumber.

Instruction on use of band saw, and practice in use of same, also wood-turning lathes.

Finishing of woodwork by staining, varnishing and waxing.

Second year, woodworking:

Work of first year reviewed and extended.

Building construction and house joinery, laying out doors, sashes, panelling, etc.

Laying out plan for house, building framing, roof construction, stair planning and building. Use of steel square to obtain board measure, lengths and cuts of common, hip, valley, and jack rafters.

Instruction on woods, properties and uses continued and extended.

More advanced cabinet-making and joinery.

Use of planing, boxing and mortising, machines, and variety saw.

Considering that woodworking is only one of the subjects taught, and consequently the boys only have a few (possibly 5 or 6) hours weekly, this is as much as the average boy can assimilate. If any more work is added, it can only be at the expense of one of the items given. Yet there are none that can be spared. I might add that, as part of their practical work, the boys have made for the school a number of articles, including stepladders, stands, tables, cupboards, filing cases and various cabinets such as a rifle cabinet for the cadets, and a trophy case. The latter is a fine piece of work with panelled back and sliding glass doors.

Broader Training Than Apprenticeship

While the present system may not give as much practical training as the apprenticeship system, there can be no doubt from the above that it shows up very well and when we consider the academic and other training received in addition to woodworking we must admit that it is the better of the two.

It may be said that much of the teaching is unnecessary to make woodworkers. Possibly it is if we are to judge by old standards but if the boys are to become well informed and intelligent citizens, able to rise up and take their place advantageously in the business world, a sound general education is essential. For this reason special attention is being given to what may be termed academic education.

Constructive Criticism Welcomed

If we desire to improve an article or structure, we first examine it carefully to see where alterations are necessary, or desirable; then we critically weigh the various suggestions before adopting any. We have been examining the technical school system of training woodworkers. Is it satisfactory? If not, how can it be improved or made more efficient?

Criticism to be of any service should be constructive. It is wrong to condemn an article or system unless an improvement can be suggested. Either let us get in and boost the present schools, or show they can be improved. It has been suggested that they are not sufficiently practical, and that in order to make them useful they must be run on factory lines. This phase of the subject will be dealt with in the next issue.

Is Sufficient Pay the Only Course?

Editor "Canadian Woodworker":

Your editorial in April issue, on the shortage of skilled labor, contains food for thought. It is a serious condition, but I do not think you are looking in the right direction for the remedy.

Why is there a shortage? All the good men we have lost in the past few years are not dead. I could place my hand on several first-class men in this city, who found it advisable to quit the factory, lock up

their tool-box, forget all about their years of training, and take such jobs as street car conductor, express driver, etc. Jobs calling for unskilled labor, yet better paid than that of bench or machine hands. We read that the window cleaners of Montreal are getting \$30.00 weekly, wet weather included. Yet there are lots of cabinet makers and machine hands getting less than \$20.00.

The shortage of labor can easily be remedied by increasing the wages so that those that really belong to us are brought back, and there is some inducement for the ambitious boy to follow woodworking. It is unreasonable to expect boys to choose our line of work, when other trades which do not take any longer to learn are much better paid.

Because the subject is unpleasant is no reason for refusing to face it. No manufacturer continues manufacturing an article longer than he has to unless it is profitable. Certainly no one would start a business unless convinced that it would be a profitable investment. Neither employers nor employees are in the woodworking business for their health. Don't blame the Technical Schools. Give them a fair chance. What else can we expect than a shortage of skilled labor when the trained men are obliged to leave, and the boys can see nothing to induce them to come in?

Yours sincerely,

Ottowan.

Standard of Manufacturers' Association Officers Temporarily at Low Ebb

The general public, having become accustomed in past years to respect the utterances of the Canadian Manufacturers' Association as the result of the prominent connection with this association of such names as Senator Frederic Nicholls, Mr. W. K. McNaught, C. M.G., Mr. W. H. Rowley, Hon. Nathaniel Currie, Sir Chas. Gordon, Mr. Lloyd Harris, Mr. Robert Hobson, Hon. C. C. Ballantyne and others scarcely less prominent industrial figures, must have noted with considerable disappointment the recent explosion of one of the members at the annual convention, in which he made use of language not generally accepted, to say the least, as forming part of a gentleman's vocabulary. That the president of the association, Mr. W. J. Bulman, an insignificant Winnipeg manufacturer, sat quietly by and allowed the members to proceed, makes him equally responsible. The incident doubtless is without significance in itself beyond the fact that it indicates that the standards of C. M. A. officials is, temporarily we hope, at a very low ebb.

The Canadian Manufacturers' Association is an organization on whose shoulders grave responsibilities regarding the industrial development of our country rest. We do not believe the members of that association, even a small fraction of them, are favorable to the use of such unbridled and offensive utterances as those made by this Mr. Harris on the occasion referred to. If the Canadian Manufacturers' Association is to become an arena for such disgraceful brawls as the recent demonstration of this man's boorishness, the influence of the organization cannot fail to deteriorate very rapidly from the high standard of past years.

Success may be made up of nine parts hard work, but the one part brains is a mighty big important part and without it the hard work will accomplish nothing.

A Stroll Through a Piano Factory

(This article is contributed by the Williams Piano Company, Oshawa, Ont., who are one of the oldest—established in 1849—and largest manufacturers of pianos and players in Canada. The manufacturing is all conducted under one roof in a building having over 100,000 square feet of floor space. The present output is fifteen pianos a day, and with the additional machinery that is being installed, an output of twenty-five pianos and players a day is anticipated by 1920.

The Williams Piano Company are now manufacturing talking machines as well, and will employ their experience and facilities to quality only. The first lot of 150 machines is in process of manufacture, production is expected to run from 150 to 200 a month.—The Editor).

The exercise of a considerable amount of care is required in building a piano (pianoforte) as its tone, touch and general appearance is dependent upon all wood parts staying where they are put and with an extremely small margin for safety against swelling, shrinking or warping. Not only must the workmanship be good, but the material used must be of a high grade, the lumber perfectly kiln dried, and a hundred and one other details, that do not come under the head of workmanship, must be scientifically handled.

We will first visit the lumber yard where from 400,-



Jackson, Cochrane automatic jointer in the Williams plant

000 to 500,000 feet of lumber is piled. This stock consists of:

Spruce: for key boards, back standard and sound board bars.

White wood: for top panel core and player actions.

Birch: for players actions and piano mouldings.

Chestnut: for core wood.

Bass wood: for core wood for small panels.

Hard maple: for backs, pin blocks, sound board bridges and player actions.

Elm: for backs and sound board linings.

Mahogany, walnut and oak: for carvings and trimmings.

Mostly all of this lumber is the best that can be secured and is all kiln dried regardless of the length of time it may have been seasoned in the open air.

Modern Equipment in all Departments

The drying is done in three Grand Rapids' Vapor Kilns, each 20 x 50 ft with a ten foot headroom. These three kilns produce on an average 5,000 ft. of dry lum-

ber per day. A daily record is kept of the amount of each kind of lumber placed in the kilns and the quantities are deducted from the lumber yard stock record. When taken from the kilns the lumber is carried on the kiln truck to a storage shed or taken into the factory on a sub-truck and unloaded directly back of the swing saws where all the lumber is cut to rough lengths. From this point to that of the final assembly all stock is carried through the factory on Watson factory trucks.

The ripping and sizing is handled by two automatic feed rip saws, a Yates No. C-2, and a Cowan & Company overhead-feed saw. As a preventative against warping and checking all core wood is ripped into narrow widths averaging about 2½ in. and the stock is then trued up and jointed on the jointers, which are four in number—one a Jackson Cochrane & Company automatic feed jointer, which will joint a 30-in. width.

This automatic feed jointer has taken the place of a Daniel's planer, which was built many years ago by McGregor, Gourlay & Company of Galt, Ont., and was designed to rough-plane glued-up panels. This planer has been in the service of the Williams' Piano Company for over forty years. The cutting was done by two ⅝ chisels attached to a cross arm and the panel was clamped to a carriage which moved underneath the revolving chisels in a manner similar to that of a metal-working planer.

The glued-up stock for the thinner panels is resawed after gluing as much as possible. For this purpose a 22 ft 6 in. Cochrane & Company band resaw is used. In addition the equipment in the machine room includes rip saws, cut-off saws, tenoners, boring machines, stickers, planers, sanders and dowel machine.

Right here, we beg to state that we believe in labor and time-saving devices and machinery to the extent of buying them whenever we are satisfied that the article is thoroughly practical.

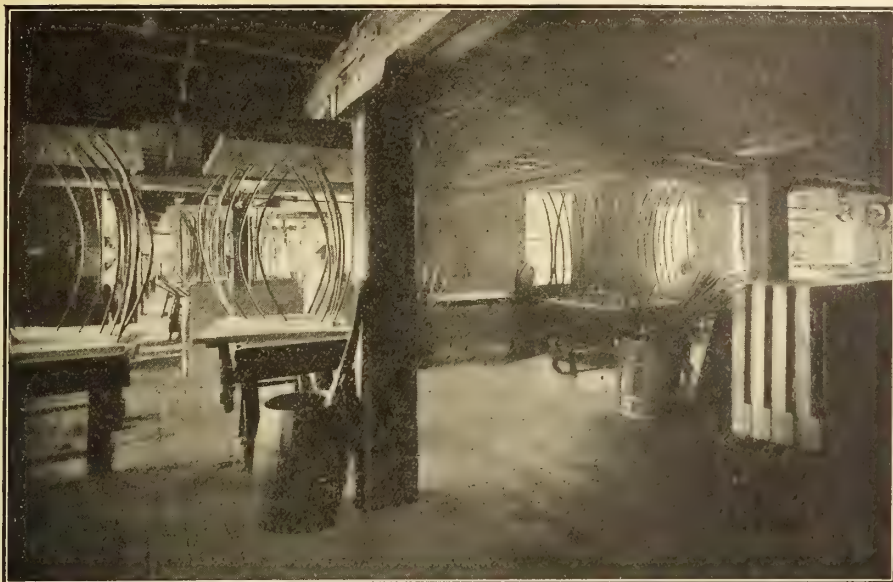
Veneering and Gluing Efficiently Handled

The glue room now claims attention. Here the panels, gables (sides of the piano case), pin blocks, etc., are glued up and the piano case parts double veneered on both sides of the core stock a hydraulic press supplying the required pressure. All of our cross banding veneer is of poplar.

After coming from the press the veneer stock is allowed to stand for twenty-four hours, then piled on trucks with spacing strips between the panels, and placed in a Cutler glue dry kiln for twelve to twenty-four hours when, regardless of the natural atmospheric conditions, the glue will be perfectly set.

The glued-up stock and stock cut to rough lengths for backs, etc., is then carried to the case making department where it is trimmed to the required sizes for final assembly.

This department has been equipped with two automatic feed sanders, numerous sand belts, spindles and drums, boring machines, two small band saws, cut-



Gluing ribs and bridges on
sounding boards



Action installing and
regulating



View of rubbing and
finishing department

off saws, rip saws, shaper, sticker, automatic turning lathe, Balls veneer jointer, Preston veneer tapping machine and many forms and clamps for assembly work.

It is in this department that the high grade veneer is cut and matched for the cases and the hand-carving done. A high degree of accuracy is secured in trimming the panels through the use of templates wherever possible.

All piano parts that leave this department are ready either for varnishing or final assembly and go to stock rooms of the different departments from which they are taken as required.

Assembling the Piano and Action

The piano back is the foundation on which the entire instrument is assembled. It is made of elm uprights, 4 ft. 1 in. to 4 ft. 6 in. in height, depending entirely upon the height of the piano, secured at each end by glued-up beams, this makes a very substantial frame. The laminated pin plank of quartered hard maple, which carries the tuning pins, is next tongued and glued to the front of the top beam of the frame or back.

The sound board is of selected spruce measuring about 4 ft. 11 in. x 3 ft. 9 in. and tapering from $\frac{3}{8}$ of an inch in thickness at the bottom to $\frac{1}{4}$ of an inch in thickness at the top to which the spruce ribs are glued on one side and the hard maple bridges to the other. A $1\frac{5}{8}$ in. x $1\frac{3}{8}$ in. elm frame or lining is glued about the edge of the ribbed side of the board, the tapered ends of the ribs fitting into a groove in the inner edge of the lining to eliminate the risk of the rib becoming unglued.

The bow presses, shown in the accompanying illustrations are used to apply pressure for gluing the ribs, bridges and lining to the sound board and are of the style that have been in common use in piano building for over a century. Taking everything into consideration, this is still the most practical method of attaching these parts. After being varnished the sound board with ribs, bridges and lining attached is glued to the front of the piano back or frame.

The bridges are notched and pinned so as to hold the strings to their proper positions and the steel piano plate weighing from 175 to 235 lbs. depending on the size of the instrument, is bolted into position over the sound board and pin plank. The holes to receive the tuning pins are bored and the assembled back is then 'pinned' or 'strung.'

The main object in the process of construction is to see that a good tone is produced. The strung backs are tuned (chipped) several times before being built into the piano case. This particular style of tuning is called 'chipping' because the tone is produced by plucking the strings with a piece of wood or chip and is done to place the proper tensions on the back and plate, which amounts to about 20 tons, and also to give the strings the maximum time in which to become thoroughly stretched so that they will stay in tune better after equipment. However, as the gradual stretching of the strings is taking place throughout the first year and it is during this time that the greatest attention should be given to keeping a piano in proper tune.

The gables (sides of the up-right piano) are now glued in place and the key bed, toe rail and bottom board are fitted. Then the piano action and keys are installed in the case and the fine action and tone regulating is done. Then, the fall board keyslip, top, trusses, pilasters and panels are fitted. This operation is

known as fly finishing. During the course of final assembly the piano is tuned several times at intervals that will allow the strings to properly stretch; and after the assembly is completed the piano is fine tuned and thoroughly inspected before being packed for shipment.

The Finish Receives its Share of Attention

An art which has a very close relation to wood-working is that of varnish finishing and we believe that this art is brought to its highest standard in piano manufacturing. In our varnish finishing department we have two Cutler varnish kilns which insure the perfect setting of a coat of varnish in seven hours thereby effecting a saving in time of from ten to twenty-four hours on a single coat, and as there are from five to seven coats of varnish applied to each piano it will be readily understood that there is a tremendous saving effected in both time and floor space, which would otherwise be necessary for the air-drying process. All piano case parts are varnished before assembly including the flowing coat.

Two Saunder's stroke rubbing machines are used for rubbing flat work. All moulding, curved surfaces and small parts are rubbed by hand. Nearly everyone is familiar with the hand polishing process used in producing the high polish on piano cases, which consists of rubbing the flowed varnish surface with rotten stone and water, first with a pad and finally by polishing with the bare hand.

A varnish has not been produced, for use on pianos, that can be guaranteed against checking and shrinking, and the piano industry is ever striving to educate the general public in the advantages of art finish, which is a process of finishing applied to walnut and mahogany in a manner similar to that used in finishing a fumed oak case. This art finish is very handsome and durable, but, the highly polished finish is still demanded by the majority of purchasers.

This article gives but a brief outline of the actual work required in the construction of a piano and was written to convey the fundamental idea of piano manufacturing. An idea of the actual work may be gained from the knowledge that from four to six months' time elapses from the day that the lumber goes to the kilns until the finished product containing that lumber leaves the shipping room.

Canadian Wood Products Wanted

J. E. Ray, Canadian Trade Commissioner in Manchester, England, was a visitor to Toronto recently. Mr. Ray is very optimistic as to the prospects facing the Canadian woodworking industry. There is a marked shortage of woodenware of all kinds in Britain today and British manufacturers are very anxious to secure large quantities of Canadian wood products. As an instance, a Manchester firm asked him to inquire into the prospects of securing 2,000,000 blocks 2 inches square to be used for teaching children the alphabet. There is a marked demand for tool handles, washboards, tubs and wooden toys including blocks, toy houses, wooden trains, cart wheels, checkers and chess sets. Mr. Ray states that the shortage of furniture is very marked and that the stocks of doors, windows and building material are very low. In his opinion the markets of the Old Country are open to Canadian manufacturers for the next three or four years and after that competition will be keener and it will be a case of quality, service and price.

Trade News of the Box Industry

Market for Box Shooks in Argentina

Trade Commissioner B. S. Weir

A large number of boxes are used by the Argentine packing houses for the purpose of shipping the various classes of meat products, such as sweet breads, livers, etc. The boxes are purchased knocked down and afterwards put through a nailing machine at the works. In normal times most of the shooks are imported from Sweden and the United States, but lately owing to the larger requirements consequent upon the increased European demand, and the difficulties experienced in obtaining regular supplies from abroad, orders for considerable quantities have been placed locally.

Inquiries made at two of the larger establishments regarding the style, measurements, and approximate prices of boxes in use, elicited the following information, which may be of interest to Canadian box-shook manufacturers.

Meat boxes in general are required to be made of a non-odorous spruce or similar class of wood. They are shipped well tied up in bundles containing 20 tops, sides or heads and 25 bottom pieces each, each bundle being bound tightly with baling wire. Meat boxes are allowed into Argentina duty free.

The dimensions given for the principal types used by one of the largest packing houses are as follows:

No. 1	9-3/8"	12-15/16"	11-3/16"	3/4"	1/2"	1/2"
No. 2	16"	15-13/16"	9"	3/4"	5/8"	1/2"
No. 3	12-3/8"	18 1/2"	12 1/2"	3/4"	5/8"	1/2"
No. 6	17"	24"	8"	3/4"	5/8"	5/8"
No. 7	17"	26"	12"	1"	5/8"	5/8"

The measurements given above are interior. The prices c.i.f. Buenos Aires, which are being paid to-day for meat boxes of the above dimensions, are as follows:

No. 1.	Parana pine,	25 cents each.
No. 2.	Spruce	42
	Parana	34
No. 3.	Spruce	51
	Parana	40
No. 6.	Spruce	68
	Parana	57
No. 7.	Spruce	1.02
	Parana	72

Parana pine is a Brazilian wood somewhat similar to that generally known as Brazilian pine, but is more yellow in color than the Brazilian pine, which has a streak of red. Parana pine is not, of course, so well adapted for the purpose of meat shipping as is spruce, but as can be seen it has a considerable advantage in point of price.—Trade Inquiry No. 1562.

Another large English freezing establishment which specializes in corned beef, is using two different sized boxes of the following dimensions:

To hold 48 1-lb. cans—

Inside measurements—

Length, 17 1/2"

Width 9 3/4"

Depth 8"

Wood measurements—

Sides, 19" x 8" x 5/8"

Heads, 9 3/4" x 8" x 3/4"

Tops and bottoms, 19" x 11" x 1 1/2"

To hold 12 6-lb. cans—

Inside measurements—

Length, 21 1/2"

Width, 13 1/4"

Depth, 10 3/4"

Wood measurements—

Sides, 23 1/2" x 9 1/4" x 5/8"

Heads, 12" x 9 1/4" x 3/4"

Tops and bottoms, 23 1/2" x 13 3/4" x 1 1/2"

Eighty per cent of the total number of boxes used are of the first type, i.e., to hold 48 1-pound cans. Supplies of these boxes have been received from Europe and some are occasionally purchased locally and the printing in each case is different; those from Europe being ink-printed, whilst those purchased locally are fire-branded.

The present source of supply is Sweden, and the boxes, made of Norwegian spruce pine, well tied up in bundles containing 20 tops, sides or heads and 25 bottom pieces each, work out at the following prices c.i.f. Buenos Aires:—

Boxes to hold 48 1-lb. cans—

\$0.88 paper, at 44 and 1.0364—\$0.373 United States gold.

Boxes to hold 12 6-lb. cans—

\$1.31 paper, at 44 and 1.0364—\$0.556 United States gold.

Boxes made of Brazilian pine, Brazilian spruce, and Argentina poplar have been used with good results.

In normal times the boxes were obtainable at prices 30 per cent cheaper than those quoted above.

This freezing establishment is prepared to consider quotations c.i.f. Buenos Aires, including the branding of its mark on the four sides, it not being of much importance the way in which they are marked provided this work is well done and the boxes altogether good to look at. Trade Inquiry No. 1563.

A third company, owning two large plants, are at present using poplar shooks, made locally, for a large range of different-sized boxes. Quotations c.i.f. Buenos Aires, will be considered for shooks of the sizes given below and for the quantities enumerated. Trade Inquiry No. 1564.

Dimension of Shooks for Meat Boxes

"A"	150	Ends	17 1/2" x 5" x 3/4"	1 piece	0.91
		Sides	28" x 5" x 1/2"	1 piece	0.97
		Tops	28" x 18 1/2" x 1/2"	4 or 5 pieces	3.60
					5.48
"B"	160	Ends	17" x 7" x 7/8"	1 or 2	1.44
		Sides	23 1/4" x 7" x 1/2"	1 or 2	1.13
		Tops	23 1/4" x 18" x 1/2"	4 or 5	2.90
					5.47
"C"	50	Ends	18 1/2" x 7" x 7/8"	1 or 2	1.57
		Sides	26" x 7" x 5/8"	1 or 2	1.58
		Tops	26" x 19 3/4" x 1/2"	4 or 5	3.57
					6.72
"D"	40	Ends	16 1/2" x 6" x 3/4"	1	1.03
		Sides	23 1/4" x 6" x 1/2"	1 or 2	0.97
		Tops	23 1/4" x 17 1/2" x 1/2"	4 or 5	2.83
					4.83
"F"	3,250	Ends	20 1/2" x 9" x 1"	1 or 2	2.56
		Sides	28" x 9" x 1/2"	2 or 3	1.75
		Tops	28" x 18" x 1/8"	5	3.50
		4 stays and butts	9" x 2" x 1/2"		0.35
					8.06
"H1"		Ends	14 1/4" x 5 1/2" x 7/8"	1 or 2	0.95
		Sides	20 1/4" x 5 1/2" x 1/2"	1 or 2	0.77
		Tops	20 1/4" x 15 1/4" x 1/2"	3 or 4	2.14
					3.86
"H2"	1,500	Ends	14 1/4" x 7" x 7/8"	1 or 2	1.21
		Sides	20 1/4" x 7" x 1/2"	2	0.93
		Tops	20 1/4" x 15 1/4" x 1/2"	3 or 4	2.14
					4.33
"H3"		Ends	14 1/2" x 8 1/8" x 7/8"	2	1.41
		Sides	20 1/4" x 8 1/8" x 1/2"	2	1.14
		Tips	20 1/4" x 15 3/4" x 1/2"	3 or 4	2.14
					4.69
"J"	100	Ends	12 1/2" x 6" x 3/4"	1 or 2	0.78

Sides	20½" x 6" x ½"	1 or 2	"	1.10	
Tops	26½" x 13½" x ½"	3		1.48	
					4.56
"M" 200 . . .	Ends 9¼" x 11" x ½"	2	"	0.71	
	Sides 25½" x 11" x ½"	3	"	1.30	
	Tops 24½" x 10" x ½"	3	"	0.23	
4 stays and butts	11" x 1½" x ½"		"	0.23	
					3.37
"N" 1,000 . . .	Ends 9½" x 14" x ¾"	2	"	1.39	
	Sides 22" x 14" x ½"	2 or 4	"	1.42	
	Tops 20¾" x 10¼" x ½"	3	"	0.96	
4 stays and butts	14" x 1½" x ½"	3	"	0.29	
					3.06
"P" 3,000 . . .	Ends 16¾" x 9" x 1"	1	"	2.03	
	Sides 18¾" x ¾" x ¾"	2 or 3	"	1.71	
	Tops 18¾" x 17¾" x ½"	4 or 5	"	2.25	
					5.99

With the exception of types "M and N" the ends require to be planed on one side only.

The number of meat boxes imported into Argentina during recent years are given below:—

Germany	247,860	.....	—
Belgium	47,644	14,510	.....
United States	269,025	90,375	.....
France	24	24	.....
Norway	13,335	10,000	.....
United Kingdom . . .	1,346,889	531,603	.....
Uruguay	52,367	.....	.....
Total	3,088,408	702,701	1,867,619 700,792

Butter Boxes

In addition to the above quantities, which relate exclusively to meat packing boxes, considerable numbers of boxes are imported for other purposes, amongst which may be mentioned butter shipments. Exports of butter for 1916 totalled 296,000 cases as compared with 189,000 in 1915, and 125,000 cases during 1914, and this export has enormously increased in 1917 and 1918. The boxes for shipping this commodity formerly came from Sweden, but the Canadian non-odorous spruce is known to be eminently suitable for this purpose. Margarine is also exported from Argentina on a large scale and a considerable number of boxes are required for this purpose. The Swedish boxes are made of clean-looking spruce, of a non-resinous nature, and absolutely non-odorous, containing very few knots. The sides are composed of two pieces, joined together by what might be described as two tenons planed on a slanting section. The dimensions given are as follow: The two side pieces, 13½-inch by 12-inch by ½-inch; ends, 12-inch by 12-inch by ¾-inch; bottom, 13-inch by 13½-inch by ½-inch; lid, 13-inch by 13-inch by ½-inch. The quantities of wooden boxes of all kinds (exclusive of meat boxes) imported during the five-year period ending December, 1914, averaged 200 tons per annum; during the year 1915, 1,235 tons valued for customs purposes at \$53,000; and in 1916, 1,113 tons, valued at \$50,000.

Further information with reference to the inquiries may be had on application to the "Canadian Woodworker."

Change in Rotary Cut Grading Rules

At a recent meeting of the Rotary Cut Box Manufacturers' Association, held in New Orleans, a slight change was made in article No. 1 of the grading rules for rotary cut box number, as published in the June issue of the "Canadian Woodworker." Referring to article No. 1 the words "full cut of log" were inserted, making it read "all stock shall be full cut of log, sound, free from rot or dote. Pin worm holes, sound tight knots, discoloration or stain shall be no defect.

Associated Cooperage Industries Meet

A new note was struck at the fourth annual meeting of the Associated Cooperage Industries of America. It was decided to inaugurate a constructive and aggressive campaign to place the cooperage industry on a staple basis and to promote the use of the barrel. Among the resolutions passed, were the following:

The agreement signed by slack stave head and hoop group to use inspection stamp on such stock only as shall be passed by inspectors appointed to inspect stock at mill.

Agreement signed by sufficient number of slack stave head and hoop group to provide for an expenditure of \$200,000 during the next three years for trade promotion and advertising to increase the use of the slack barrel.

The unqualified approval of the modified system of open price competition expressed by groups now using the same.

Secretary Krafft was authorized by light coopers group to draw up for approval of members modified form of open price competition. F. S. Charlot was elected president.

More British Import Restrictions Removed

The restrictions on the importation of the following articles (inter alia) is removed:

Canes of all descriptions, manufactured and un-manufactured.

Sorghum carpet whisks.

Wood wool.

Plywood chair seats (perforated).

Reels and spools, wooden, required for the textile trade.

Wood blocks and unfinished turnery parts for toys.

Mangle roller blocks, rough sawn.

Wood-ware for drawing offices and schools.

Cornice pole ends.

Turned chair rails and general turnery for the furniture trade.

Door handles, wooden.

Plywood.

All other wood manufactures not specifically mentioned.

The importation of the following articles is to be licensed only exceptionally as and when required:

Dowels.

Broom handles and brush stocks.

Curtain rods.

Spring blind rollers, wooden.

Pressed mouldings.

Cornice poles and rings.

Builders' joinery.

Office and Institution furniture.

Domestic furniture of all kinds.

Mangle rollers, wooden.

Locks, including padlocks, but excepting trunk locks.

Stoves and ranges.

The furniture manufacturers of Ontario are holding furniture exhibitions at the following centres: Toronto, The North American Furniture Company and The Owen Sound Chair Company, July 7 to 19; The Canada Furniture Manufacturers, Ltd., all July. Kitchener-Waterloo, the Kitchener-Waterloo furniture makers exhibition will be held July 7-19.

Sparks and Filings in the Saw Room—No. 5

Tension and Strain for Small Resaw Blades—Table and Method of Calculating— Maintaining Quality in Out-put

By Edgar Usher

In this article it is proposed to deal with the care of band resaws, 8 in. and under. These machines are commonly found in furniture factories, planing mills, box factories, etc. We will endeavor to point out the troubles that are often encountered and suggest means by which they may be overcome.

It is only just to assert, that the filers of band resaws of this size often have to contend with a multiplication of the difficulties and problems met with by the filers on the larger band mills. These comparatively small blades are frequently called upon to cut lumber of greater width than the average stock sawn in a lumber mill, and to keep steadily at this work for ten hours a day over lengthy period of time. Such instances are encountered in box factories where a number of narrow pieces are glued together before being resawn, the total width of the cut often being from 24 to 30 inches. Absolute accuracy is called for on this work for a variation of 1/16 of an inch in the cutting means a lack of uniformity in a carload of shooks. In many cases this variation would be sufficient to cause the buyers to refuse delivery of the shooks. Another reason why accurate work is demanded is that in box factories in an endeavor to keep the costs down to a minimum, sizing with planers is largely eliminated and the result is that the band resaw has to do a work of a grade not called for in saw mills. With the more recent introduction of the horizontal resaw, the band saw has been called upon to stand up under still greater strain, consequently the filer must necessarily exercise still greater skill in their up keep. On the other hand it may be claimed that the lumber cut in the various factories is invariably clean and free from gravel or stones, but the fact remains that the normal work is comparatively heavier and the other elements are abnormal conditions which in a saw mill are taken care of as far as possible by special fitting.

Quality of Work depends on Condition of Saw

To obtain the best results it is essential to keep a band resaw in perfect running condition at all times. If it is allowed to fall short of this at any time the evidence will be forthcoming in the quality of the work produced.

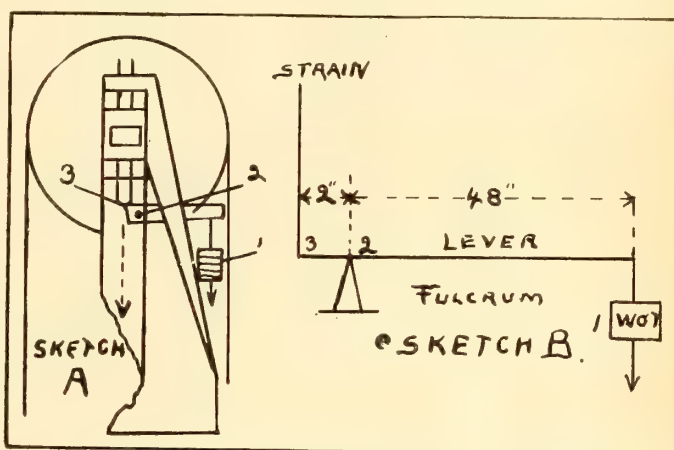
In a general way the treatment of tension may be applied as outlined in previous articles with the exception that it is not as universal a practice to carry a tire on this size of saws. The tension is put in clear out to the gullet. This necessitates in turn the taking of an even greater amount of care to insure a uniform tension. This point cannot too forcibly be impressed on the resaw filer for it means not only the difference between good and poor production, but often enough the difference between production and closing down the plant.

It is impossible to set a standard governing the amount of tension to be carried in band resaws. Speed of mill, amount of feed, vertical or horizontal machine, strains carried and average size of cut are items that must be considered in deciding the amount of tension to be carried. For partial guidance it may be said that for saws of 6 in. in width a tension of from 26 to 30 ft.

circle is commonly carried. It must be borne in mind that while it is at times necessary to carry the greater amount, it is, at the same time, more difficult to keep the blade from craking with a heavy tension than if a smaller amount of tension can be made to do a maximum amount of good work. Some filers make a small circle, then boast about it, but it is not good practise. The larger the circle, consistent with good work and for production, the better.

Amount of Strain Carried is Very Important

The question of strain is more often neglected in the running of a small band saw than in the larger saw



Sketch showing how strain is calculated

mills. It is hard to understand why this should be as it is more liable to be the cause of trouble in a factory than elsewhere.

As a matter of fact, many filers working on small resaws have not any idea of the proper amount of strain for the various widths of blades, and too often for the mill on which they are working. While it is possible to set a practical working standard of strains, a certain amount of judgment must also be exercised in specific cases where a greater strain is acquired to keep the saw stretched to its work. It can be readily understood that too great, or too little, strain is often the cause of poor work and cracked saws. The table printed below is a standard that can be safely used for guidance. The figures represent about the minimum amount of strain that it is satisfactory to carry. If the mill is in good shape, the work being done is not abnormally heavy and the feed of an average speed, these figures are sufficiently high.

Table of band saw strains for various widths and gauges of band saws:

Gauge	Width 2½"	3"	3½"	4"	4½"	5"	6"	7"	8"
Up to 21"	800	950	1050	1200	1300	1400	1600		
19-20	1000	1200	1400	1500	1700	1900	2200	2500	
18			1700	1900	2100	2300	2600	3000	3300
17				2300	2500	2700	3200	3600	4000

The writer is satisfied that if the filers will check up the amount of strain they carry, it will surprise some to find out how far astray they are in this res-

pect. Carrying the correct amount of strain will overcome at least some of their saw troubles.

After ascertaining, by use of the table, the correct amount of stain required by the mill under discussion, it will be well to refer the accompanying sketch "A." No. 1 is the weight, the fulcrum or point of balance No. 2 and the point of resistance at the base of the shaft which supports the wheel we will call No. 3. Referring to sketch "B," to make the illustration as simple as possible, we will take 48 in. for the length of our lever and allow 2 in. for the distance between the fulcrum and the point of resistance at base of shaft. We will suppose that a 6 in., 20 gauge, saw is being carried.

Referring to the table we find that the proper amount of strain is 2,200 lbs. This amount multiplied by the distance between the fulcrum and the point of resistance 2 in., must equal the sum of the length of the lever, 48 in., multiplied by the weight carried. When figured out it will be found that a 20 gauge 6 in. saw, under the above conditions, would require a weight weighing 91-2/3 lbs. The writer has designedly used figures which are not likely to be found in actual practice, but which will serve to illustrate the point clearly. It must be understood that to have the strain correct the lever must be horizontal.

Keep Lever Free From Sawdust and Dirt

After the weight has been correctly estimated and the strain properly adjusted it is not sufficient, as some operators appear to suppose, to leave the machine to look after itself. Sawdust will inevitably pack into the space between the lever and the frame of the mill and eventually choke up unless care be taken to keep the lever free from dust and oil so that when the machine is running there is a continual up and down movement of the weight as the strain is alternately taken up and released by the pressure of the feed on the saw.

The writer has frequently examined mills so choked up with dust and oil that it is hard to conceive how the saw could possibly be expected to do anything approaching good work. The only way it could be made to stay on the wheels was by putting a dead strain on the wheels, by tightening up on the expansion shaft. The result was that whenever the saw was called upon to meet an unusual strain, there was nothing for it to come and go on, such as is provided by a free working weight and lever. Consequently, the saw would either dodge, and thereby make bad lumber, or as more frequently happens it would crack or break. "Keep the weights working freely at all times."

Inquiring for Compoboard, Wood Centre

Vancouver, B. C., June 19, 1919.

Editor, "Canadian Woodworker":

Will you be kind enough to inform us where we can procure a compoboard consisting of an all wood centre, made up of narrow strips and covered with fibre on the face and back

Sincerely yours,

James Wood.

A compoboard such as you require is on the market under the name of Bisphoric wall board and is manufactured by the Bisphoric Wall Board Co., Limited, Ottawa, Ont. The Vancouver agent is J. Fyfe Smith & Co., Limited, hardwood lumber dealers. It is likely that they carry a good assortment at their Vancouver warehouse.

National Hardwood Association Convention

Owing to the unprecedented conditions existing in the hardwood lumber industry more than usual interest was evinced in the twenty-second annual convention of the National Hardwood Lumber Association which was held in Chicago, June 19-20. More than one thousand lumbermen responded when the meeting was called to order and from the standpoint of attendance the convention was more successful than usual.

President Goodman in his annual address drew attention to the fact that the conditions confronting the meeting this year were entirely different to those existing when the last annual meeting was held. Last year it was a war convention and the lumbermen were striving to assist the Allies, with every means at their command; this was a peace convention and the problems were those of peace and reconstruction. He went on to review the past year and dwelt on such questions as the disposal of government stock, more efficient inspection, the inauguration of a traffic bureau to keep in close touch with the changes in rates and other shipping regulations.

He called attention to remarkable growth shown by the National Association during the last few months, instancing the fact that the membership is well over the 1,000 mark and was still climbing.

The president's address was followed by the annual report of the secretary-treasurer, Frank F. Fish. The finances of the association are in good shape and show increased net assets. The members in good standing number 1,046. The annual output of the mills operated by members is in the neighborhood of 6,000,000,000.

The rules committee brought in a few slight changes to the inspection and grading rules. These were adapted by the unanimous vote of those present.

Officers for Ensuing Year

The following officers were elected for the year beginning July 1:

President—C. A. Goodman, Marinette, Wis.

First vice-president—Horace H. Taylor, Buffalo, N. Y.

Second vice-president—J. W. McClure, Memphis, Tenn.

Third vice-president—C. H. Worcester, Chicago, Ill.

Members of Board of Directors, for three-year term—E. V. Babcock, Pittsburgh, Pa.; G. E. Breece, Charleston, W. Va.; J. R. Thistlethwaite, Washington, La.; E. M. Vestal, Knoxville, Tenn.; Geo. W. Cleveland, Jr., Houston, Tex.; T. M. Brown, Louisville, Ky.; D. E. Chipps, Fort Worth, Tex.; Chas. N. Perrin, Buffalo, N. Y.

Kitchen Cabinets in England

What looks like a splendid opportunity to develop trade in kitchen cabinets comes across from England in a consular report on the housing reforms advocated by the women's housing subcommittee of the Ministry of Reconstruction's Advisory Council. Among the findings in the report of this committee appears the following: "The kitchen cabinet used universally in America has much to recommend it." This ought to furnish good working material for the boosters in the kitchen cabinet trade.

Upholstering and Trimming

Buy Now, But Buy Wisely Government Slogan to Regain Confidence and Prosperity

By Hon. H. B. Wilson, Secretary U. S. Department of Labor

Buy Now, but Buy Wisely. This is the slogan upon which the Information and Education Service of the Department of Labor, under the guidance of Roger W. Babson, is conducting a campaign to boost this country from a period of uncertainty into a period of prosperity. Mr. Babson says that the surest way to get the desired results is to tell the people what the trouble is and then to tell them how to remedy it.

Briefly, our difficulties are due to the necessary readjustments of our war-time activities into peace-time industries. During the war the Government asked the people to refrain from buying anything they did not actually need. Every dollar, every ounce of strength, was needed for war purposes; there was nothing to spare for the production of things which could be done without.

Now the war has ended, and we find that our stocks of peace-time goods are depleted. There is a lack of almost everything that was not produced in quantity for the war. With the depletion of our supplies there has come, since the signing of the armistice, nervous relaxation and a feeling of uncertainty and loss of confidence throughout the country.

Labor and capital are muddled. Industry is marking time. The manufacturer has not been purchasing his raw materials except as he needs them from day to day. The merchant is operating with a skeleton stock upon his shelves. The public is refraining from purchasing except for its immediate necessities. Everyone is waiting for everyone else.

How can business be energized? How can confidence be restored throughout the country? How can labor be induced to get back its desire to produce and capital to speed up the remobilization of peace-time activities?

Mr. Babson believes that the desired results can be accomplished by administering the following stimulants to the country: First, tell all progressive merchants and manufacturers—tell all who have anything to sell—to advertise now and take advantage of the great market which exists at this time.

Second, tell the public that now is the time to buy—that they, the people, in normal peace times are the controllers of all production and all distribution.

If the consumer buys, the merchant sells and in turn is forced to buy. The manufacturer and the producer of raw materials are forced to buy and sell. Labor is put to work. The brakes put upon industry are thus removed. The machinery of production and distribution is set in motion. To create the desired stimulus the public is being urged to buy, to buy wisely, but to buy now—to-day—what it wants.

Now is the time when a few additional purchases added to the daily necessity purchases will increase the grand total of sales to such a magnitude that the mer-

chant will be obliged to replenish his stock on a large scale. The wholesaler, the manufacturer, and the producer of raw materials will be obliged to increase their production. A demand will be created for all the goods which the workingman produces. There will be a job for each jobless man. General confidence will be restored. Business will be booming. Reconstruction and remobilization of our war activities into peace-industries will go on quietly, energetically, healthily, unconsciously. Prosperity will come again—a normal prosperity of peace with industries running at full time and the worker at his bench or his desk.

Now is the psychological time to begin this drive for prosperity. Let us take up the slack; let us do all that we can to allow the period of reconstruction to pass with the least possible hardships for labor and capital.

We, the people, must start the ball a-rolling—must do what we can, buy what we can, help all we can. So buy now, but judiciously, but buy to-day.

Now is the psychological time. Let's go.

This is the message of the Department of Labor.

Woodworkers Elected C. M. A. Officials

At a recent annual meeting of the different branches of the Canadian Manufacturers' Association, the following woodworkers were elected to office:

Toronto Branch—Executive Committee: R. H. Eason, Otto Higel Co., Limited; Albert H. Gourlay, Gourlay, Winter & Leeming; Walter Laidlaw, R. Laidlaw Lumber Co., Limited. Representative to Executive Council; John Firstbrook, Firstbrook Bros., Limited; Thos. Finlay, Massey-Harris Co., Limited.

Maritime Branch—Chairman, Angus McLean, Bathurst Lumber Co., Limited, Bathurst, N. B.; vice-president, L. W. Simms, T. S. Simms & Co., St. John, N. B.; executive: C. D. Dennis, Canada Car & Foundry Co., Amherst, N. S.; W. D. Piercey, Piercey Supply Co., Limited, Halifax, N. S.

Prairie Province Branch—Executive Committee: F. M. Beatty, Cushing Bros., Limited, Saskatoon, Sask.

B. C. Branch—Executive Committee: D. W. Hamber, B. C. Mills & Trading Co., Vancouver; J. H. McDonald, B. C. Manufacturing Co., Limited, New Westminster; J. O. Cameron, Cameron Lumber Co., Limited, Victoria, and N. A. Yarrow, Yarrows, Limited, Victoria, B. C.

"The Kitchenmaid"

The above is the name of the kitchen cabinet manufactured by The H. E. Furniture Co., Limited, Milverton, Ont. This firm has just issued a nicely illustrated catalogue describing the different cabinets comprising this line and in addition their line of utility boxes, medicine cabinets and Tennessee red cedar chests are shown. Mr. D. McIntyre is in charge of their Winnipeg warehouse where a complete stock is always on hand.

The Lumber Market

Domestic Woods

"Prices still climbing" sums up the situation with regard to domestic woods. Conditions here parallel closely those which exist below the line where advancing prices and diminishing stocks are the outstanding features. The local demand for both hard and soft wood is good, while the demand from the States is exceptionally strong. Owing to the marked shortage of all kinds of lumber and the increased demand due to improved building conditions and large orders from other users American buyers are coming to Canada and buying all the stock they can possibly secure. High prices do not seem to deter them at all, providing they can get the lumber. To this one feature, perhaps, more than any other, can be attributed the steady increase in lumber values in Canada. The building situation is much more active in the States than in Canada and this has materially increased the demand for Canadian spruce, hemlock and other soft woods. The American buyers are trying to keep up diminishing hardwood stocks with shipments from this country and are buying birch, beech and maple in large quantities. The local demand is all that is to be desired. Wood users, such as furniture, sash, door and box men, builders, etc., are all seeking material. B. C. lumber is practically off the market; the increase in the price of B. C. timbers has brought it up to the same price level as the Ontario stock with the result that the local man gets the preference as long as he can supply the material. The prairies are taking a fair percentage of the B. C. product, while a considerable quantity is being shipped to the soft wood producing areas of the United States. It is hard to forecast the future but if the present movement continues it looks as if available stocks will be exhausted before the next winter cut is on the market. If that occurs the manufacturer who refrained from buying, looking for a lower price, will in all probability find himself short of lumber, or, as an alternative, forced to pay an exceptionally high price to secure sufficient material to keep his plant running. The wise buyer is the one who has figured his needs for the next ten or twelve months and who is leaving no stone unturned to buy sufficient lumber to fill his requirements.

Imported Woods

Conditions in the American hardwood market are the same as at last writing only more so. There has been a marked increase in the demand at all the lumber producing centres. Prices are advancing almost from day to day and the peak does not seem to have been reached. Some prominent lumbermen have ventured the prediction that prices will increase for the next six or seven months before reaching a stationary line. The buyers of all the different lumber using industries and trades are in the market to buy all the stock that they can secure and are bidding against each other in their mad scramble to secure material. The export situation has a big influence on present conditions. While the movement of lumber overseas has been small to date, yet it is steadily increasing, the demand for lumber being so insistent that many dealers are willing to pay the high ocean rates to secure the stock. As the shipping situation eases both with regard to bottoms

and freight rates the lumber dealers realize that there will be an unprecedented movement of stock overseas.

Conditions in the different producing centres are not at all favorable to the production of the normal output of lumber and even were it possible to bring the production above the normal level the increased output for the next six or eight months would merely serve to fill the depleted stock of the different yards. The present erratic price movements are not looked on with favor by the lumber manufacturers themselves. They would much rather see prices reach a stabilized condition, as under present conditions they themselves do not know what certain stock is going to be worth tomorrow.

Quartered white oak is very scarce and prices are aviating rapidly. It is reported that this wood in 1 in. FAS grade, is selling on the Chicago market for from \$150 to \$180 per M and No. 1 common is bringing from \$112 to \$115. In many cases enquiries fail to bring any response as all available stocks have been disposed of.

Memphis reports a strong demand and the shipments are as heavy as the limited amount of dry stock will permit. Adverse weather has hindered production so that very little cutting or hauling is being done. Evansville, Ind.: Prices are rapidly advancing and stock are at a low ebb. Quartered white and plain red oak are in strong demand. There is a good demand in Buffalo and while some of the yards have a fair stock there is a marked shortage in many lines. Prices are advancing as the dealers find that they are forced to pay stiff prices to secure stocks. Many mills have withdrawn all quotations as they have nothing to offer.

The furniture, sash and door and automobile men are buying all they can lay their hands on and the fear is being expressed that many concerns will be short of badly needed lumber during the coming winter.

Evansville Company Now Co-Partnership

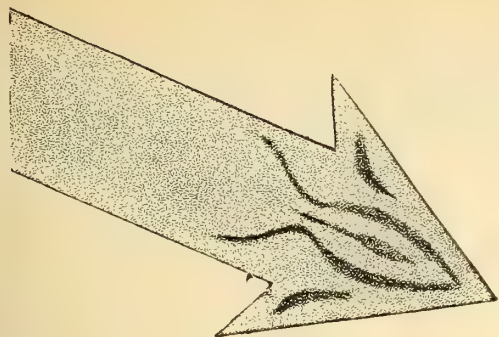
The Evansville Band Mill Company, one of the well known lumber manufacturing concerns at Evansville, Ind., has surrendered its charter as a corporation with the secretary of state at Indianapolis and in the future will be operated as a co-partnership. There will be no change in the management. The Evansville Band Mill Company has been in business for the past three years and has built up a wide and extensive trade. Frank M. Cutsinger was the president of the corporation, George H. Foote was the vice-president and treasurer, while Joseph Waltman was the secretary.

Chair Seats

A subscriber to the "Canadian Woodworker" in Vancouver, B. C., wishes to get in touch with Canadian manufacturers of three-ply-wood chair seats. Carload lots would be required. Anyone interested may obtain the name and address from the publishers of this journal.

Steel Braces for Tables

Steel braces are being used to a considerable extent in the manufacture of tables. When used they have several advantages not found in the wooden brace. They are not only cheaper to use than wood but prove more satisfactory on account of the non-shrinking feature of the metal. New tables, which had been in storage for more than a year, were found to be perfectly rigid upon examination.



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FOR EVERY PURPOSE

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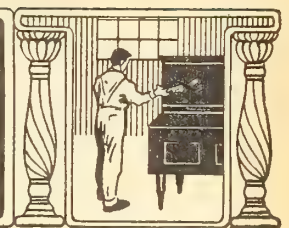
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Michigan



THE FINISHING ROOM



Treatise on Ochres, Umbers, Siennas

Familiarity with Raw Materials Advantageous —Composition and Changes Due to Calcination

By Dixy Wells

The objects of these articles is to set forth in simple language helps for the foreman finisher—points which have been gathered from experience. Of course, some of these may already be known to certain finishers, but others may not be acquainted with them, and even those who have acquired considerable knowledge of practical finishing sometimes forget just at a time when it is important to remember.

In order to get the most from any line of endeavor it is necessary to know its practical side, and particularly in finishing, if one knows exactly what each ingredient is for and what to expect of it as a working material, one is able to demand the functions for which they are paying, so that he may carry out his work more intelligently and produce results that are uniformly satisfactory. In all enamels, paints and general finishes, there are a number of raw materials. Each is selected for a specific purpose, and if it does not prove satisfactory should be changed. All finishing materials, therefore, should be thoroughly examined from a physical and chemical standpoint and should not be used until found a hundred per cent. in all respects.

Good Idea to Test Material

Proper examination may be made in several ways, depending entirely on the nature and use of the material. Sometimes a chemical analysis and other preliminary tests are sufficient to determine that the ingredients examined are up to standard. In all cases a complete record of these tests should be kept, and the sample under examination filed until the material has proved O.K. from a practical standpoint. If so found the sample can be discarded, but its record should always be retained for future reference.

There are numerous heads under which various raw materials come, materials which are classified according to their derivation, that is, whether they are inactive pigments, natural or synthetic. The organic coloring materials, such as dyes, coal tar products, etc., which include the making of organic colors, the oils, stains, the thinners, and in fact everything that is contained in the material, when complete, has its pedigree and specific purposes, which should be well established before being applied to the wood.

You may be interested, for instance, in dry, raw materials and white pigments that are classified as as follows:

Table 1.—Natural and Treated

Iron Oxides	Raw and burnt sienna
Metallic Browns	Raw and burnt umbers
Lowe's Metallic	Mineral Blacks
Yellow Ocre	Van Dyke brown

Inert Earthy Pigments

Marble dust	China clay
White mineral primer	White filler

Paris white
Gilder's whiting
Whiting.
Asbestine pulp

Bartyes
Gypsum
Silica
Silex.

Table 2.—White Pigments

Leaded zinc	White lead
Sublimed white lead	Zinc oxide
Lithopone	Zinc lead.

In referring to the first table we find the raw colors. These are used straight and also for tinting. You will understand that there are a great many so-called ochres, siennas and umbers on the market, but not, however, of the three browns. In fineness the French ochres are leaders. They are also uniformly recognized for their uniformity of color and general adaptability. They are chemically hydrated oxides of iron which are percolated through a clay medium, this method being saturated to the extent of from 16 to 20 per cent. over pure oxide of iron. The balance of the unit is made up of hydrated silicate. The base of the yellow color is hydrated iron, and the higher the iron content the richer the color, which also makes strong colors for tinting qualities.

Umbers and Siennas in Ochre Class

We find that the best grade of umbers and siennas are imported from Cyprus, the siennas coming from Italy, from which they derive their names, Italian Sienna and Turkey Umber. These products are, however, somewhat in the ochre class, as they are hydrated oxides of higher iron content, but are used in a combination with manganese dioxide of variable quantities. We find, on examination, that raw sienna is a little darker than the pure ochre, and this difference is without doubt due to more iron, and the dioxide of manganese which is black. We obtain burnt sienna from the raw by calcination at a low heat, which dries away part of the water from the hydrate of iron, which, in turn, increases the oxidation, giving us, as a result, a rich brownish red color.

Chemical Changes in Raw Materials

We are adding below a little table which gives a good idea of the chemical changes that occur in the ochres, umbers and siennas. This table was formed by Harry B. De Pont, a famous analytical chemist:

Table 3.

		Raw Ochre	Burnt Sienna	Raw Umber	Burnt Umber
Moisture . . . .	.44	.42	.39	1.16	.84
Loss of Ignition	8.50	18.40	13.25	15.75	5.16
Silicates	60.57	14.46	15.22	23.55	25.48
Ferric Oxide . . .	19.52	60.30	64.40	39.73	48.63
Alumina	10.62	3.86	4.30	3.42	3.36
Dioxide		1.60	1.92	15.68	16.15
Undetermined . .	.31	.90	.52	.71	.38
Total	100.00	100.00	100.00	100.00	100.00

Iron oxides are produced by grinding and oxidizing natural iron oxides, these coming from various localities, principally such American points as Michi-

gan and Pennsylvania. A very good grade of iron oxide is found in Canada. All of these have a wide range of color, depending entirely upon the composition of the ore and the degree of oxidation to which they have been subjected. The color in these oxides vary from a pale brown to a brilliant scarlet, and the oxidation is produced by calcination after the natural ore is mined and ground very finely. The uncombined water is then drawn off and the material assumes a color from brown to scarlet. The iron oxide ranges from 50 per cent. to 80 per cent., and the balance is made up of silicates and alumina, magnesium, calcium and combined moisture, and the value of this pigment is due entirely to the unsusceptibility of the iron oxides to heat changes.

There is about ten times as much manganese as raw sienna in raw umber, the iron content being a little lower. A peculiar brownish green color is obtained from the composition in which there is an increase in the hydrated silicate. Burnt umber is produced in the same way as burnt sienna, the change being produced by the chemical process.

These oxides of various shades which give them their tinting strength are used in all phases of paint making, straight and combined with inert paint and enamel, making inert and other materials. They are, of course, used for tinting enamels and giving very delicate flesh tones and pink tints, which are used in some of the best cabinet enamels for furniture finishing.

Suggestions for Finishing Rosewood

Windsor, Ont., July 5, 1919.

Editor, "Canadian Woodworker":

Can you give me a good formula for rosewood stain and the best method for refinishing rosewood? Thanking you in advance for the above information, I am,

Yours truly,

R. S. Buckwell.

We do not know of any real rosewood stain. There are a number of reddish brown or chocolate colored stains on the market that are called rosewood on account of their color. The peculiar grain and the variation in color found in rosewood preclude the possibility of it being successfully imitated by staining other woods. Rosewood can be successfully imitated by graining but it is too complicated a process to attempt to deal with. The effect is secured by rubbing of the graining material instead of graining on top of a suitable base as is ordinarily done.

Rosewood is finished much as any other wood. A filler, toned to the desired shade, is applied and worked in thoroughly then rubbed off across the grain. Allow to stand two days then wash surface off with turpentine. Next apply a coat of shellac, orange for a dark finish and white if a light color is desired. Varnish with a good grade of rubbing varnish and when dry rub down with rotten stone and oil for a dull finish and rotten stone and water for gloss finish.

Rosewood is a very oily wood and it is necessary to remove part of this oil by baking before it can be permanently finished. If you are finishing new stock it would be advisable to bake it in the oven, thus driving off the oil. The baking will effect the color to a certain extent, the longer the heat is applied the lighter the color. If part of the oil is not removed the finish will come off in the course of a few years.

Hints on Filling and Finishing

By An Old Finisher

It is well to apply fillers with a stiff, stump brush which permits you to rub them well into the wood grain. The best of the standard fillers should set in from a half an hour to an hour, after which the surface should be rubbed off. However, if the weather is warm, or you are doing the work in a heated room the evaporation of the oils in the filler is much more rapid than if the work was being done in a cold room or during cold weather. This all you must take into consideration.

The standard ready mixed fillers are much preferable to those which one might make up in the factory. In the standard fillers they run uniform, each batch assuring good work, which is not always the case where haphazard combinations of materials are made up in the finishing room. Standard brands are made up in accordance with a fixed formula, certain quality goods of proper proportions are scientifically mixed and each time go through an identical manufacturing process which insures uniform quality and work.

Above all places there should be no guess work in the finishing room. Imagine what would result if the cabinet makers ignored details as to measurements, etc., and simply guessed at them. They pay particular to grades of wood, and each and every component part is made in accordance with a fixed pattern, and you, therefore, should weigh, measure and test everything that makes up good stain solutions, varnishes, fillers, etc.

Trouble Experienced From Printing

Much trouble is experienced in the finishing room to what we have to come to call "printing," that is papers, bits of excelsior or burlap will stick to the varnished surface. This may, of course, be caused by the fact that insufficient time has been allowed for the drying of the varnish. There are, however, standard goods on the market which claim to be print-proof, and yet dry quickly.

As drying is an important item in furniture manufacturing in order that the least time may be consumed between the hour when the work is finished and when it may be safely packed and shipped, it is very important that your varnishes are intelligently chosen. It is well that the foreman should try out all varnishes he uses, do a little experimenting and determine their qualities for himself, and when he finds a good brand of varnish, one whose price is right and whose working qualities are absolutely satisfactory, stick to it—do not always be changing brands.

Be sure that you put your varnish on thin, be sure that it flows out evenly, giving each coat ample time for drying, and you will escape many varnish troubles, and just because the surface may feel dry to the touch, do not make the mistake that it is dry all the way through. Varnish should be allowed to dry absolutely hard.

Quick-setting varnish, of course, must be laid on freely and allowed to flow out, and varnish that has to be worked until you feel it pull on the brush cannot be properly worked out.

You see after all, while your finishing materials are important, the largest percentage of value in results lies in the head of the man who is doing the job.



The Varnish Secret That Died With Martin

It was a rare formula that this 18th Century Wizard of wood finishers used to produce his masterpieces. But even with it, weeks of tiresome labor and months of curing were needed to bring out the full, deep lustre of the wood.

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Today there are few, if any, secrets of wood finishing. To secure the deep toned finishes that are so essential to your product you have but to turn to

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Especially for finishing furniture and for piano and cabinet work of every kind Marietta Stains are pre-eminent. They meet the modern demand for speed, volume and speed in finishing. They are always practical, yet do not sacrifice that prime essential—beauty.

Our water and oil stains are compounded from the strongest dyes obtainable.

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Spartan Art Wall Finish gives an exquisite
flat finish that is washable.

Securing a Dark Fumed Oak Finish

Formula for Toner and Acid Stain—Guard Against Contact with Metals—
Method of Applying and Finishing

By Bert D. Wolf

There are many different shades of fumed oak and various ways of producing fumed oak finishes, but I will endeavor to explain only two processes of producing the standard dark brown shade of fumed oak. Be just as careful to have your work come from the cabinet department free from glue and well sanded as for golden oak. Glue spots will cause more trouble on fumed oak work than on golden oak, and will be harder to touch up, therefore look over the pieces to be stained thoroughly before staining.

Because of the action of the materials used in making these stains on metals, and the changing of the color of the stains, metal dip tanks and drain boards should be avoided. Have two wooden dip tanks made large enough to hold the largest pieces to be stained with two wooden drain boards, so made that when not used as such, they can be used as covers for your dip tanks. Place your dip tanks, if at all possible, on horses so if it at any time you find it necessary to do so you will be able to tighten any or all of the bolts running through the sides and bottoms of your tanks to stop any possible leakage. Have one end of the dip tank higher than the other, just enough to allow for draining the contents of the tank through a wood faucet at the bottom of the side at the low end to allow for cleaning out the tank from time to time, as it becomes necessary. For the first dipping solution mix one ounce of resublimed pyrogalllic acid, one ounce of tannic acid and one ounce of yellow dextrine with each gallon of cold water. This solution is generally known as fumed oak toner, and if you have never used dextrine in making this you will be agreeably surprised by the results obtained as dextrine is a very good adhesive and holds the tannic and pyrogalllic acids to the wood during subsequent sanding, insuring a greater and more uniform amount on the surfaces to be acted upon by the second solution to be used.

For the second dipping solution mix two ounces bichromate of potash, four ounces twenty-eight degree ammonia, six ounces soda ash and one dram of jet black nigrosine soluble in water to each gallon of water used. You will find it necessary to use hot water to thoroughly dissolve the bichromate of potash and the nigrosine, while the soda ash and the ammonia will dissolve in cold water. For experimental purposes it is a good idea to do as follows: In one quart of cold water dissolve four ounces ammonia twenty-eight degree, in another quart of cold water dissolve six ounces soda ash, in another quart of boiling hot water dissolve two ounces of bichromate of potash, in another quart of boiling hot water dissolve one dram of jet black nigrosine soluble in water. When all are thoroughly dissolved pour the four separate one quart solutions together, making one gallon of fumed oak acid stain which is ready for use with just a little stirring.

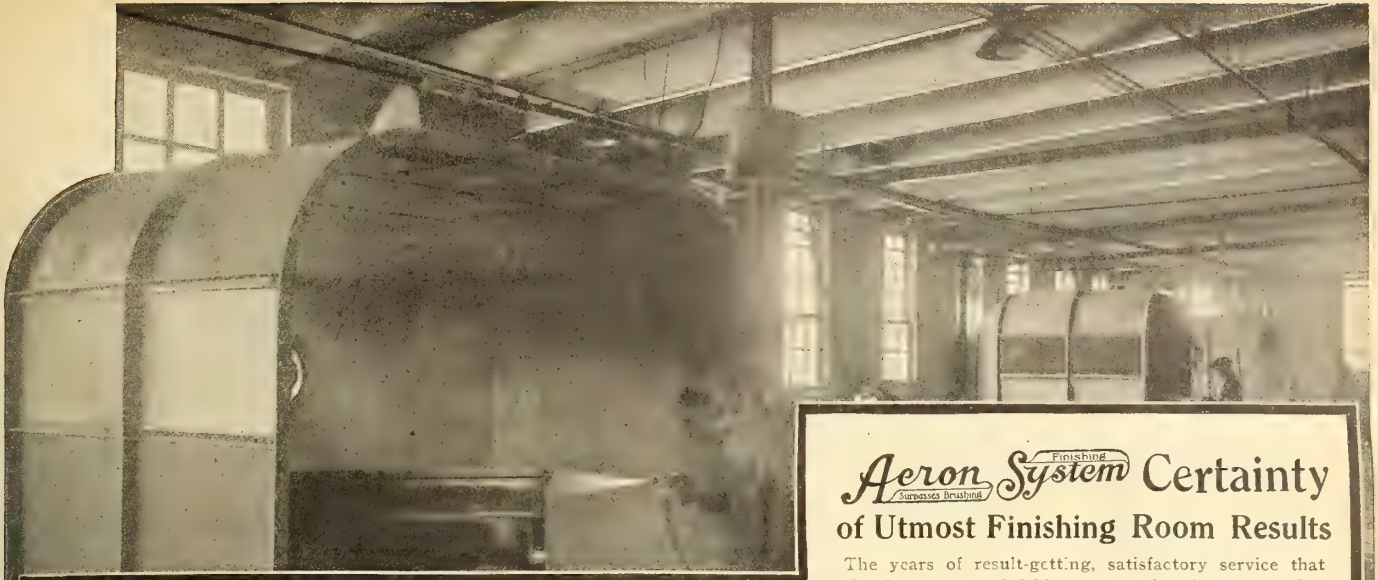
After the two different dipping solutions have been prepared in the two different wooden dip tanks you are ready to proceed with your work as follows: Dip the white work into the first or toner solution and allow to drain on the drain board which has been so arranged that any article put on could be so placed that

all parts would be at such an angle to let the stain properly drain off of all surfaces. Should there be any corners from which the toner has not entirely drained, pick it up with a brush moistened in the solution.

Allow the work to dry from three to four hours and sand the raised grain with number one half finishing garnet paper to an even, smooth surface and dust off. The work is now ready to be dipped into the second solution, or fumed oak acid stain, and again allowed to drain and brush off any surplus as before, using a brush moistened with the last solution used and allowed to dry from four to five hours. The pieces are now ready to finish with a coat of one-half orange and one-half white shellac reduced with alcohol to flow out smoothly, allowed to dry thoroughly, sanded, dusted and given second coat of one-half orange and one-half white shellac thinned to the proper consistency with alcohol and allowed to dry about three hours, when the work is again sanded and dusted, then waxed with either a liquid or paste wax.

For work made entirely of oak, or where there is a shortage of floor space that will not allow the use of two dip tanks, or when a cheaper finish is desired, the following proportions will make a fairly good one coat stain: To one gallon of water add three ounces bichromate of potash, three ounces bicarbonate of soda, one-half dram nigrosine jet black soluble in water, one-half ounce resublimed pyrogalllic acid and six ounces twenty-eight degree ammonia. In using this stain eliminate the toner solution entirely and you will have fairly good results, but not as good nor even a color as by using the two stain method. Finish by applying two coats of shellac or one coat of shellac and one coat of wood lacquer and then waxing, sanding between coats. You will find it necessary to take more pains with sanding after the first coat of shellac to avoid sanding through the edges than where the toner is first used because the wood will be much rougher as the grain of the wood has not been previously raised. For a paste wax dissolve one pound of pure beeswax, one pound of ceresin wax and one-fourth pound of carnauba wax in turpentine in a hot water bath and add a little Japan dryr while still warm and stir thoroughly. All of the waxes used should be shaved with a knife or cut into small pieces to save time in dissolving them in the turpentine. This will be necessary with the carnauba wax especially as it is very hard and dissolves slowly. This wax can be cheapened by adding one pound or one and one-half pounds of paraffin wax if it is so desired for cheap work. After the wax is once dissolved more turpentine can be added to reduce it to the consistency desired for use. Should you desire to color the wax use oil soluble aniline colors only and dissolve them in turpentine in a water bath before mixing with the wax.—American Furniture Manufacturer.

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The years of result-getting, satisfactory service that the Aeron spray-finishing system has been rendering the wood and metal-working industries, gives to each new installation of this equipment an assurance of the utmost in quality, speed and economy.

No matter what type, size or grade of product you manufacture, nor with what kind of finishing material you coat it—the Aeron System undoubtedly is now being used on work of the same or a similar character, and will be most certain to make it possible for you to do the highest grade of work at a big reduction in costs.

Operation Facts One Aeron operator easily does the work of 2 to 6 or more hand brushers—governed by nature of work. A cleaner and more uniform coating of every material is applied—there are no brush marks, thin spots or fatty edges. Work is made absolutely healthful and safe—all fumes are completely removed. Equipment is kept in the best working condition at practically no cost. The Aeron System is sold on a strictly guaranteed basis, and every installation followed up by a competent service organization.

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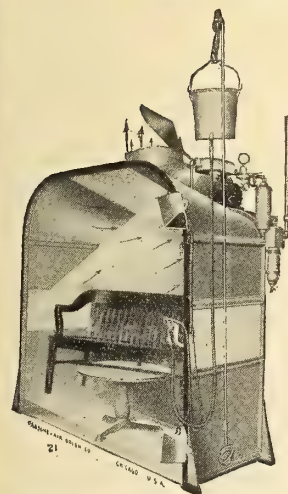
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INTO ONE
AND IMPROVE YOUR FINISHES**

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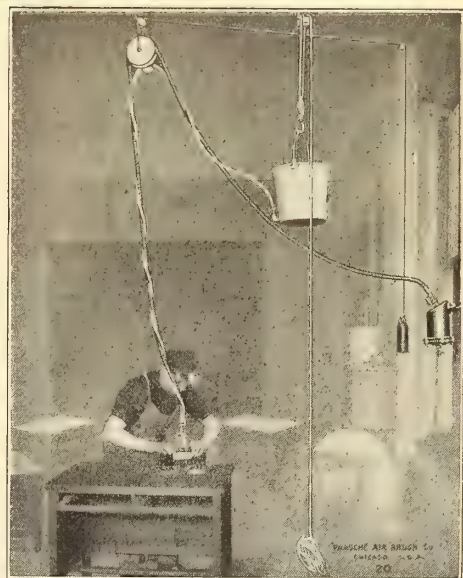
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TELEGRAMS: "DRYAD, LEICESTER"

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17th May, 1919.

Fred W. Green, Esq.,
Overseas Reed and Cane Co.,
Ionia, Mich.

My Dear Green,

My foreman has just come into the office with a hand basket made from your cane, to show me what it will do, and I want to heartily congratulate you and the others concerned on turning out material quite up to the German pre war standard. It really does one good to see work turned out with such beautiful material again, and I only hope that you will soon get us a good batch through, so that we can wipe our hands of the other stuff we have been using.

I cabled you and my manager followed it up yesterday while I was away. I am certain we can do a lot of business with this material if we can get it through.

With best wishes,

Yours sincerely,

HHP-MBO.

HARRY PEACH.

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Overseas Reed and Cane Company
Ionia - Mich.

Veneers AND Panels

Rising Costs of Veneers and Panels

By S. B. Anderson*

It is six months since this association last met. These have been eventful months. Then we were just entering on the transition period leading from war to peace. Then we looked forward with many misgivings toward what the future had in store for the business interest of the country. Factories that have been in full blast producing materials for war were faced with the problem of closing down or turning their force to other products—products required to serve the needs of peace. The producing ability of the country had been crowded by the demands of war to its utmost speed. Many new plants had been built, and many others enlarged so that the producing capacity of the country was much larger than it was at the beginning of the war.

Four million men had been taken out of industry and were about to be returned. The demand for food stuffs to feed our army and the people of our Allies had been enormous. The task before the business men of America then was how to turn their forces from the manufacture of war material to the manufacture of articles for peace consumption, to absorb the returning soldiers and to meet the lessening export demand for food and other products without shock or disaster. The failure of Europe to plant foodstuffs, owing to Bolshevism uncertainties and general unsettled conditions and the effort of America to feed the starving people over there, has prevented, to a large extent, the falling off of foodstuff shipments.

Must Not Lose Sight of Home Market

The situation in Europe—all parts of it—is deplorable, and unless something can be done to relieve not only the stress of hunger, but the more dangerous stress of idleness no one dare think of the future, and what the demand may be on us no one can foretell. The demand will be for a long time strong for our farm products to feed the people. These goods will in some way, be paid for. With anarchy and unrest prevailing rehabilitation will be slow and a demand for other than the absolute necessities of life cannot be expected. With the revival of industry in Europe we will again come into direct competition with European goods with the prospects of being driven out of some markets we have occupied since Europe's handicap of war. While we should make a fair and legitimate fight for foreign trade we must not lose sight of our domestic market. It is estimated that 90 per cent. of the products of America is consumed at home. The retention of this market is mandatory. During the war we needed no laws for protection of this trade, but we must remember that at the beginning of the war business was in a very depressed condition. With the return of peace—real peace—peace within nations, as well as between nations, the forces that brought about the depressed conditions in our

business will again be put in motion. In fighting for foreign markets we must not allow our domestic markets to be filched from us. We must see that it is protected.

Retail Demand Keeps Prices High

While we have not yet passed through this transition period we are well along the road. While all is not exactly as we might wish and while some lines of business have suffered the jars so far in passing over the rough roads have been comparatively slight. There was a general expectation that prices would be lowered to point past the profit earning. There has been great hesitancy on the part of the business man to buy in quantities. He wanted to wait until prices dropped. This hesitancy on the part of buyers was justified by the apparent situation and no merchant could afford to fill his shelves with high-priced goods with a threatened drop just ahead, and no manufacturer could afford to load himself up with high-priced raw material when he felt by waiting he could buy at lower prices. The belief that lower prices were coming was general, but retail trade was good. This is always the case when the people have money. They have it now. This is what has brought us this far safely through this reconstruction period. The great prosperity prevailing among the people in general—not the business man in particular—not the financial man, but the wage earner, the farmer and the general public has been the salvation of the country during this transition period. The demand for goods to supply immediate wants has forced the hand of the merchant and the manufacturer, and he has been compelled—willingly undoubtedly—to do business in spite of pessimistic views of the future. With demand from the retailers for goods the manufacturer has been forced to the market for supplies at prevailing high prices and, of course, his goods must sell high as his raw material and labor has cost him a high price.

Labor, not Raw Material, the Big Factor

You hear a great deal of talk about "raw material." Now I understand raw material to be something used in the manufacture of goods, to which no labor has been applied. If my understanding and definition is correct, raw material is nearly a negligible quantity—saw timber in the tree, minerals, oil and coal in the mines constitutes all the raw materials of which I have any knowledge. You may figure lumber used in your products as raw material, but it is the sawmill's finished product, as the finished product of the logger is the raw material of the sawmill. A moment's thought will show you how extremely infinitesimal the item of raw material is. Everything is largely labor—and so long as labor is high products will be high, and lower wages should not be expected with high cost of supplies. If each handler of each process that a manufactured article passes through will confine himself to a legitimate profit for his part of the operation no one will

*Anderson-Tully Company, Memphis, Tenn.

suffer from paying high prices. Legitimate prices, whether high or low, must be obtained if the country is to prosper. Personally, I believe in high prices, and I believe in good profits. I believe in prosperity that comes with the prosperity of all the world—with good wages, good salaries, fair profits in return for good business management—good prices for farm products. I was brought up on a farm and I know that \$2.00 wheat tends to make better citizens of the farmers than does 50c wheat. We all realize, especially when paying our grocery bills, that farm produce is high, but we must realize that the farmer is a very important factor in the welfare of the nation, and if we know anything about it we will admit that for many years his lot was a hard one—hard work, hard living, hard conditions and nothing else. It is only during the past few years that he has received a fair remuneration for his strenuous labor. The cry is on "back to the farm." If present conditions hold there will be less inducements for the young men to leave the farm and the hope of the nation is that conditions remain so that the attraction will be toward the farm instead of from it.

More Even Distribution of Money Assets

The conditions that have obtained within the past few months emphasize the difference between artificial prosperity—prosperity of the few, the building up of great fortunes and the accumulation of great wealth within limited space and in few hands, and the other and real prosperity based on general dissemination of wealth—wealth distributed—the money in the hands of the body of the people. Real prosperity comes only through the ability of the general public to buy. A million dollars in one man's hand is of little benefit except to the possessor, but a million dollars in the hands of a thousand men helps the public, because it will be largely spent. Hence the benefit of good wages and good prices in general.

There are yet many problems unsettled. The railroad problem, fraught with much danger in itself, and complicated with that other problem that will not down—the labor problem, the telephone, the telegraph problems, local public utilities problem, and many others. I have great confidence in the average good sense of the American people and I believe these problems will, in time, be worked out. In the meantime, as citizens and business men, we must move on, doing our best, not in an entirely selfish manner, but with a just regard to the rights and interests of others, and to the general interest of the country.

Panel Stock May Go Higher

Now as to our own industry—veneer and panels. These are raw materials to our customers—the veneer is raw material to the furniture manufacturer. Our raw material is high and may be higher. There is a remarkable scarcity of hardwood lumber in the yards of the country—manufacturers have been doing a hand-to-mouth job of buying, hoping for the drop which failed to come. Some lumbermen, being somewhat discouraged at low prices and poor demand, shortened production, and the extremely bad logging conditions prevailing through the past winter did the rest, and when the manufacturers did finally conclude to buy they found stocks at the mills very short, and in addition to this, the export demand is again becoming fairly active, not as active as it will be soon, but still sufficiently so to perceptibly effect the market.

The scarcity and high price of logs effects the ven-

eer man, as well as the sawmill man. Good logs are worth too much cut into lumber to be worked up into veneers at a low price—so you can figure your raw material high—logs for the veneer mill and veneer for the panel man. With conditions here outlined you will readily take the hint that your goods, if wanted at all, must bring a good price or make you a loss. We manufacturers of raw material—raw to the man further along—are handicapped. We can't go out and run a selling campaign, thus boosting our business, but we must wait the motion of the fellow further along or possibly higher up, and if his market falls off we can simply wait—no campaign—no fine salesmanship will help us. Regardless of general business prospects for the future I believe we may safely figure on high cost for our raw materials.

Increasing Cost of Production

Good hardwood timber is becoming each year less available—I will not prophecy an exhaustion of the supply, too many prophets have been brought by this to confusion to tempt others, but supply is growing constantly less—the expense of handling is constantly growing. Timber, near lines of transportation is being exhausted and the logger is moving further and further back with longer and longer hauls and higher expense. Railroad hauls are lengthening and railroad rates are increasing. When once timber strikes a higher level it never recedes—it may, owing to bad business conditions, hesitate and waver, but no great decline will come. When a change does come it will be an advance. The quality of timber is growing poorer, while prices are advancing. It costs much more to get good products from a low run of logs than it does from a high run. I realize a change in business conditions—lowering of wages, lowering of food cost and general lowering of operating costs will be reflected in the price of our purchases, but the forces tending upward will more than balance these depressing forces.

From this review of conditions I am convinced that until there is a break in business conditions—a break in labor and a general lowering of values our product will constantly tend to a higher cost.

Furniture for London and Buenos Ayres

Harrod's, the big department store in West End of London, England, has appealed to the Associated Business Papers of the country for a variety of merchandise in which may be found the following things which some of the manufacturers likely to see this will find articles which they may supply. The goods wanted by possible readers of this are for the Belgian wholesale department, the London store and the store which is conducted in Buenos Ayres, South America. The things wanted are as follows:

For the Belgian Wholesale Department—Go-carts and office furniture.

For the London Store—Wooden beds and chamber furniture and a general line of furniture, sewing machines, wicker furniture, household hardware, small bronzes.

For Buenos Ayres—The same as for London excepting hardware and machinery.

The big London concern has established an office at 225 Fifth avenue, in New York, where the representative of the house can be seen by appointment by salesmen who want to tackle some of this business.

Veneering Has Been Reduced to a Science

Moisture Content of Core Equalized—Value of High Temperatures in Drying—
Eliminating Working and Checking

By John Welmer

The two important elements in the making of veneers and plywood are the treatment of the core stock and the glue or binder used.

In the first place the core stock must be well seasoned and equalized to a moisture content equal to the content it would reach in the average living room, which is about 5 or 6 per cent. of the dry weight of the wood. The best core stock is that which is least affected by atmospheric conditions. Light woods such as chestnut, white pine, and honduras mahoganys are little affected because for a given amount of natural wood there is less fiber than the heavy woods. This means that wood fibre alone, regardless of the kind of wood is the same weight per volume, providing the fibres are pressed until no air cells remain. Superheated wood is affected about one-half as much by atmospheric conditions as wood kiln dried at low temperature. Superheated wood is simply wood which has been subjected to temperatures above the boiling point for an hour or more. This process has not been tried out very extensively but test runs have shown it is less liable to be affected under different atmospheric conditions, therefore making it a good core stock. Wood kiln dried at high temperature is also known to be less affected by changes in atmospheric conditions.

Core Must be Dried After Jointing

Core stock should be equalized both before and after it has been jointed and glued. It is most important to equalize it after gluing for the joint wood absorbs some of the moisture from the glue and swells slightly. So it can readily be seen that if the core stock is planed or surfaced and veneered before it has equalized for four or five days the joints will shrink when they finally dry and cause an uneven appearance.

Probably the simplest method of equalizing cores is to pile them on stickers three-fourths inch or seven-eighths inch thick in a room where the humidity is properly controlled. A forced circulation in the same direction as the stickers run would greatly improve this and would not be difficult to obtain. Of course, the best way to equalize the stock is to use a regular dry-kiln in which heat and humidity can be regulated as required. A dry kiln can equalize stock in about one-third the time necessary the other way.

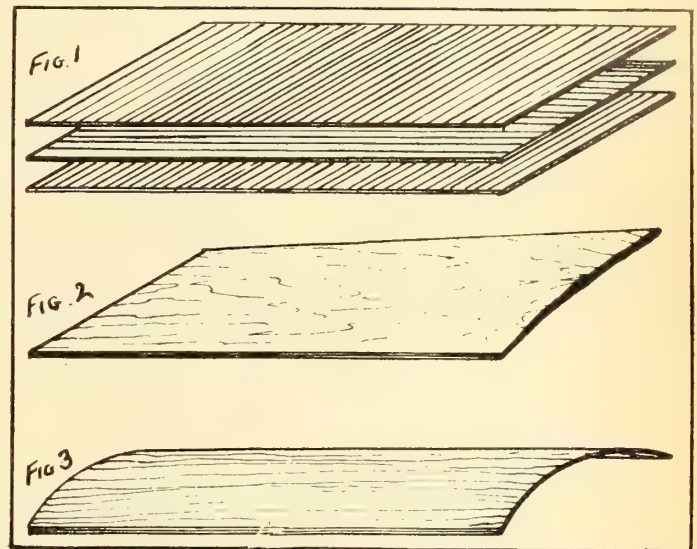
Use of Glue Should be Thoroughly Understood

The glues used play a large part in the veneer industry and I believe if everyone connected with glue rooms understood the how and why of glues, considerable expense could be saved. The three principle glues used are animal, vegetable, and cassein.

Animal glue, probably the best known of all glue, is made from hides, hoofs, bones, etc., of animals and requires heat. The glue should not be prepared too far in advance as glue is stronger when first melted than it is when heated all day. The heat should not go much above 140 deg. F. as heat is very injurious to glue. When the glue is fresh it should have a not unpleasant odor. When veneering with animal glue the heat must be kept up until squeezing, and this heat is supplied by hot cauls. The panels should be left in retainers overnight as is done in many places.

This gives the glue a chance to set and cool, for the cauls do not lose their heat very quickly when there is no outlet for the heat to escape.

Vegetable glues are being used to a considerable extent in the veneering industry principally because they are inexpensive. Vegetable glues are prepared from starches principally cassava, but others are used also. Some caustic soda and water is added to this starch and mixed for about an hour in a mixer which will heat the material at the same time. At the end of the mixing the glue becomes transparent and tacky and



The working of three ply panels

when cooled is ready for use. This glue will last for a few days before becoming unfit for use.

Cassein makes a good glue when mixed with lime and other chemical compounds. Although it is called glue it is really a glue cement which it resembles when hardened. The change which takes place when the glue sets is not definitely known but it is said to act similar to cement. When dry it is practically water proof which makes it desirable in some furniture especially when used in damp places or climates.

Method of Gluing Thin Stock

Blood albumin glue or cement has been known for a long time but the U. S. Forest Products Laboratory has recently developed a method by which veneers as thin as one-one hundredth and twentieth of an inch can be glued successfully. The glue is coated on thin tissue paper and dried which leaves it in a sheet form. The veneer to be glued is placed in a hot press with a sheet of this glue and squeezed at one hundred and fifty pounds to the square inch at a temperature of 212 deg. for a period of approximately two minutes. The panel is then ready for use. This glue has its advantages and disadvantages. The advantages are its waterproof qualities, the speed at which it can be glued, and ability of gluing thin veneers without buckling. The disadvantages are primarily its cost which is much above other glues, and the inconvenience of handling.

When making three of five ply panels of thin ven-

eer care should be taken to have veneers of the same density and thickness opposing each other. They should be laid as near as possible at right angles to each other. (Fig. 1) for deviations as slight as five degrees from right angles cause unequal stresses which will warp and twist the panel when drying as shown in (Fig. 2.) If an opposing veneer is thinner than the other or is sanded thinner after gluing chances are that the panel will cup as shown in (Fig. 3).

Reducing Checks to a Minimum

Quite often when gluing fine veneers like crotches or burls it will be noticed that checks appear after the panels are dry or during finishing. This is due to the fact that the veneer absorbs the moisture from the glue and swells. Of course, after it swells it is pressed in the distended condition. Then when it dries it shrinks and checks especially where the grain runs through instead of parallel with the veneer. Coating the veneer with glue-size or other mixtures tend to retard this swelling somewhat but experiments prove that although the sizing may be waterproof in itself it will not water proof the veneer. The Aircraft Division of the Forest Products Laboratory have made experiments along this line and have demonstrated that no coating except the aluminum leaf will keep moisture from the wood. So it would appear that about the only remedy for the checks is to put pressure on the veneer almost immediately after it is glued. One method in use is to coat the core stock with animal glue, let it get tacky and then put the veneer on with a warm caul and pressure. The addition of sugar or syrup will better the glue some for it will become more damp when heated and consequently stick better.

The Powers Regulator

The wrong cut was published in the advertisement of the Canadian Regulator Co., Limited, Toronto, appearing on page 103 of the June issue of the "Canadian Woodworker." The one appearing was a Powers Regulator No. 16. This regulator is connected directly to the steam valve and is used principally in comparatively small rooms, or those in which the circulation of air is perfect. In the No. 15 regulator, which should have been included, the thermostatic pulb is connected with the steam valve by a flexible tube permitting the thermostat to be placed in any convenient position in the room or kiln, the temperature of which is desired to control. The No. 15 is especially applicable to dry kilns, cookers, warming ovens, varnish drying-rooms, etc.

Adams-Elting Company Loses Vice-president

The death of Joseph C. Gale, vice-president of the Adams-Elting Company, Chicago and Toronto, occurred recently at his home in Rogers Park, Chicago, Ill.

Mr. Gale was one of the original members of the firm and when the company was reorganized in 1891 he was appointed vice-president, a position he held until his death. He was an earnest and faithful worker and was known among his associates as a man of unusually generous disposition. In his intercourse with his fellow man his life exemplified the Golden Rule and those with whom he came in contact will miss his cheerful presence and genial associations.

Be sure your wife's right, then go ahead.

Open Joints—Mechanical Appliances Not Infallible

By Glue-room Foreman

One reads a lot about open joints both in veneered surfaces and solid jointed stock. The suggested causes for such trouble run all the way from climatic conditions to certain peculiarities of the stock itself; seldom is the trouble laid to poor workmanship or faulty tools.

The majority of the work in our glue room consists of flat panels veneered on both sides with sawn and sliced oak veneers. The veneer is jointed on a large cutter knife and carefully taped before being laid on the core. We have been gluing this stock for years and have been well satisfied with the results that we were getting.

Open joints were unheard of in connection with our glue room product. A short while ago the fact that something had "slipped up" in our glue room was brought forcibly to our attention by the frequent complaints from our cabinet department. These became more and more persistent and grew monotonous from their sameness, open joints, open joints, open joints.

Naturally, we were in a quandry. This was a new experience for us and we hardly knew how to tackle it. We blamed everything we could think of; damp veneers, damp cores, cores too dry, poor glue and a host of other imaginary causes were investigated but the cry of open joints was borne to us with unfailing regularity. Needless to say, we were at our wits end.

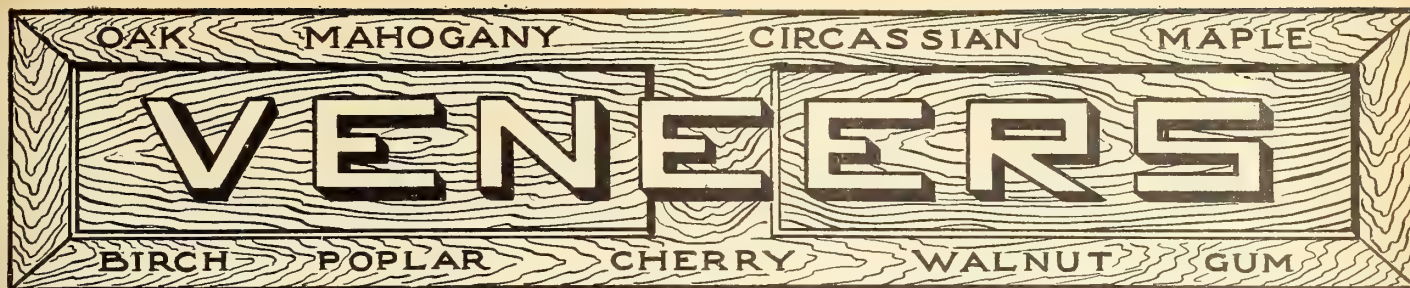
One of the workmen suggested that the fault lay in the taping of the veneers, that perhaps the man performing this operation had become careless and was letting a few badly taped joints slip through. A careful check on his work did not show any faults, the joints being carefully taped and brought tightly together.

As a last resort we asked the foreman of a neighboring glue room to step in and give us the once over. Often an outsider will notice obvious short-comings that we through familiarity would overlook. One of the first questions asked was with regard to the taping of the veneers. We were in a position to assure him that the fault did not lie there. He then asked us if we had checked over our cutting knife to make sure that it made a true joint. No we had not done this but as we had been using it for years and had never experienced any trouble we did not think that the knife could be at fault. Anyway didn't the veneers joint true when taped?

The stranger insisted that we run over the knife and make certain that it was O. K. We took a few pieces of thick veneer and carefully jointed them on the cutter then tried out the joint made. Sure enough the test showed a hollow joint in the heavy veneer. The cutter knife had either been spring or had become worn in the centre and when we replaced it our trouble ceased.

The thin face veneers that we were using even though they were jointed with a hollow joint would pull together tightly when taped and show a perfect joint. When they were laid on the damp glue on the core, the dampness would loosen the tape releasing the veneers and naturally when the strain was released the joints would open and would be placed in the press in that state.

After this when I bump up against trouble of any kind, the mechanical appliances will be the first to be checked over and not till then will I look elsewhere for the fault.



THE OHIO VENEER COMPANY

Importers and Manufacturers

Foreign and Domestic Veneers and Hardwood Lumber

We always carry a large and assorted stock of Mahogany, Circassian Walnut, Sawed and Sliced Quartered Oak.

Send us your enquiries and orders. We guarantee good service.

2624 to 2644 Colerain Avenue,

CINCINNATI, OHIO.

Birch Veneer

1-20, 1-16, 1-8

We can ship immediately a crate or a carload. Also a complete stock of panels.

GEO. L. WAETJEN & CO.

MILWAUKEE

WISCONSIN

Veneers and Panels

PANELS

Stock Sizes for Immediate Shipment. All Woods. All Thicknesses. 3 and 5 Ply or made to your specifications

VENEERS

5 Million feet for Immediate Shipment
Any Kind of Wood Any Thickness

We are Chicago agents for WOCO FIR PANELS, and carry a full and complete line in all stock sizes and all thicknesses at our Chicago warehouse for immediate shipment.

J. J. NARTZIK

1986-76 Maud Ave.,

CHICAGO, ILL.

The Dean-Spicker Co.

Manufacturers of

VENEERS

OAK - MAHOGANY - WALNUT
AND

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22nd St. and So. Crawford Ave.
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NATIONAL VENEER & LUMBER CO. ROTARY-CUT POPLAR

Large Sizes, up to 10 Feet in Length

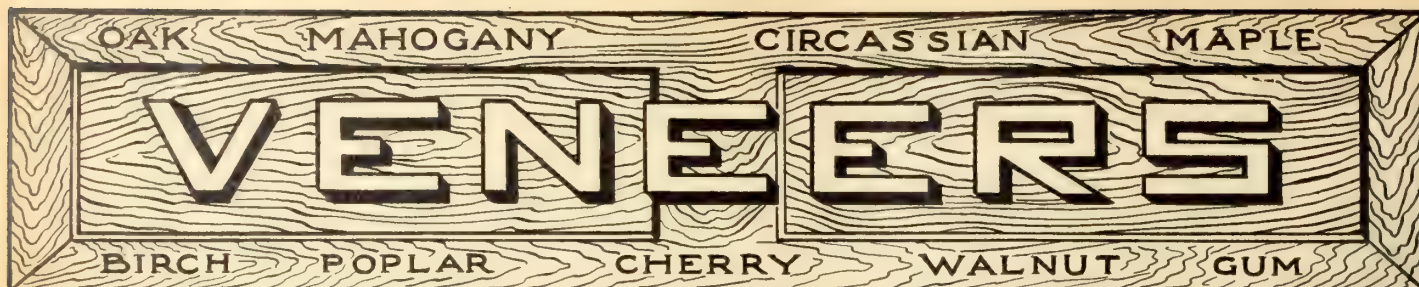
AMERICAN WALNUT VENEER

Long Wood and Butts

QUARTERED WHITE OAK

1635 West Michigan Street

INDIANAPOLIS, INDIANA



Wood - Mosaic Co.

NEW ALBANY, - - - IND.

WALNUT

Lumber - Dimensions - Veneers

If you are in the market for anything in Walnut, let us figure with you. We have cut three million feet of Walnut in the last year, and have a good stock of all thicknesses dry. We can also furnish Walnut dimension—**Walnut Veneers**. We have a large stock of veneers, plain, stripe figured and stump wood.

Wood-Mosaic Co., Inc.

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Lumber

Plain and Fancy
VENEERS

Mahogany, Walnut
Birch, Ash, Poplar
Rotary, Sliced or Sawed in all
Thicknesses

Built up Stock in
Birch and Maple

Send for Samples



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QUALITY

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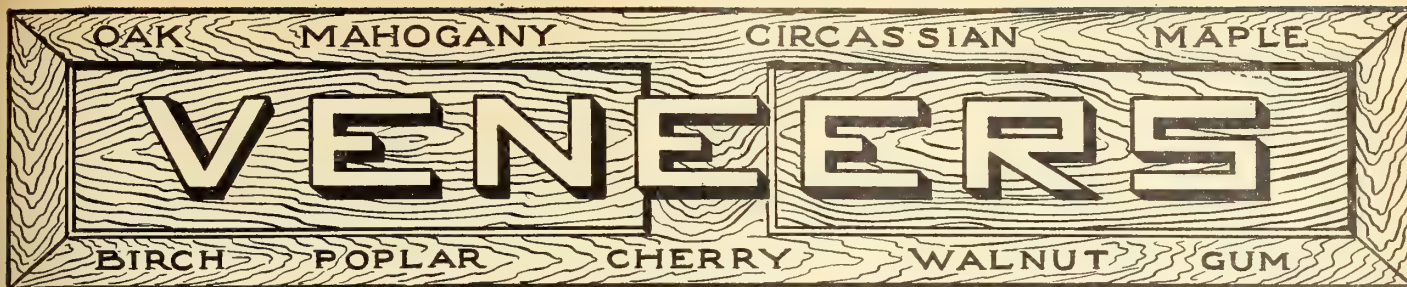
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MANUFACTURERS OF

American Walnut
Exclusively

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Incorporated 1904 Established 1867

American Beauty Walnut and Northern Grown Oak the Hardwoods Without a Peer

We have been cutting and turning out these high grade lines of veneers for over half a century. Experience has taught us the correct method of manufacture—how to bring out the true beauty of the wood. You are sure to appreciate their quality and grade. Why not send us your next order? We can ship promptly and your satisfaction is assured.

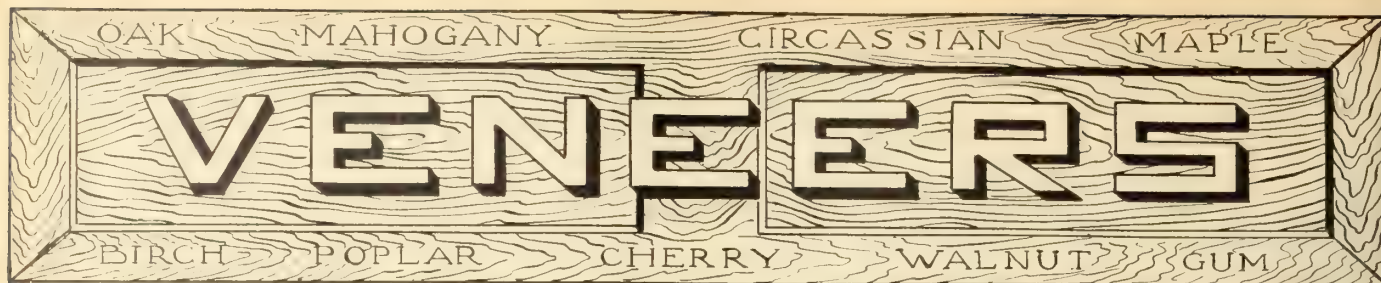
Hoffman Brothers Company

800 West Main St.

-

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Fort Wayne, Ind.



Rushing the Order

Sawed and rotary veneers, poplar crossbanding and sheet stock, Walnut butts and long wood and quartered Oak veneers of highest quality can be shipped exactly as you order and when you order. Prompt and efficient is our service and reliable and satisfactory is our stock. Let us fill your next order with the precision and accuracy which has made our service so satisfactory.

W. T. Thompson Veneer Company

Edinburgh, Indiana

U. S. A.

Underwood Veneer Co.

WAUSAU - WISCONSIN

Manufacturers of

**Rotary Cut Birch
Veneers**

for

**Doors, Panels and
Furniture**

Send us Your Enquiries

Buyers of Veneers and Panels

will find it to their advantage to purchase from the manufacturers and dealers whose advertisements appear in this publication. They are progressive firms—the leaders in the business, which is a guarantee of good service and prompt attention to orders.

Give your business to the man who will spend his time and money to get in touch with you. He deserves it—if his stock and prices are right.

Western Office, 516 Lumber Exchange, MINNEAPOLIS, MINN.

Mills at GLADSTONE, MICHIGAN

The Northwestern Cooperage & Lumber Co., Gladstone, Mich.

THE HOME OF "PEERLESS" STANDARD BRAND PRODUCTS

Manufacturers of

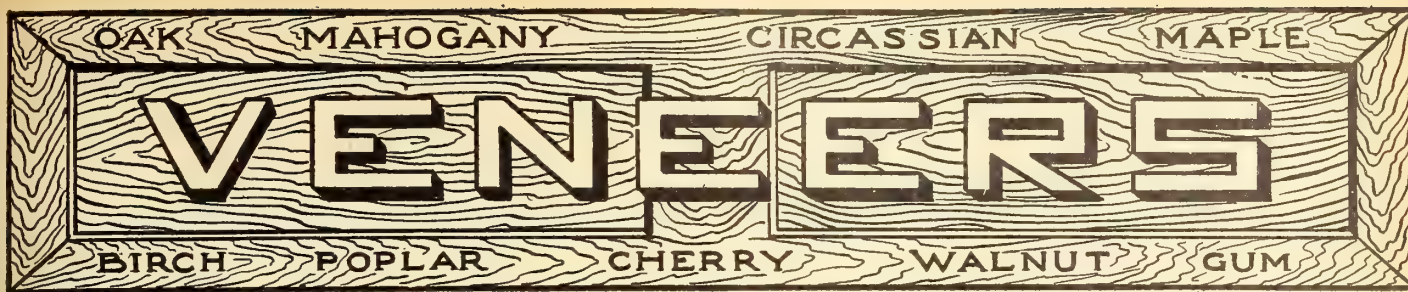
"PEERLESS" ROTARY CUT VENEERS

in Birch, Elm, Basswood, Maple, Ash and Beech for all purposes

Also hoops, liners and staves for manufacture of packages

Also "Peerless" Rock Maple, Beech and Birch flooring; Hemlock lumber; Lath, etc.

"Peerless" products are standard everywhere and you are always exercising Safety First in using them. Try us next time.
(When writing mention Canadian Woodworker)



Poplar and Walnut Veneers

We specialize in large size poplar veneers as we have extra fine poplar logs. We can cut veneer up to 10 feet square.

Our walnut veneer cannot be beat, both in plain and figured wood.

Write us for prices.

Central Veneer Company
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Southern Veneer Manufacturing Co., Inc.
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Manufacturers of all kinds
of Sawed, Sliced and
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VENEERS

Carrying a large stock of
selected Mahogany,
Figured and Plain Walnut, Walnut
Butts, Sawed and Sliced Quar-
tered Oak and Sycamore and all
other native woods.

**1,000,000 Feet Quartered Red
Gum to select from**

CAN fill rotary-cut gum orders promptly

WE Respectfully solicit your inquiries

In the Rush of Increasing Demand for Veneers

The natural tendency is for manu-
facturers to strive toward a greater
output often at the expense of
quality.

This is a mistake which the Law-
renceburg mills are carefully
guarding against and buyers may
be sure that in ordering "BATES-
VILLE QUALITY" Veneer they
are getting goods manufactured
in strict accordance with that
standard of quality maintained for
so many years.

Batesville Lumber and Veneer Co.
LAWRENCEBURG, IND.

Superior Quality **Sawed Quartered White Oak Veneer**

1/20" and 1/16"

is our "hobby"

And we give SPECIAL SERVICE
on L/C/L Orders

Memphis Veneer & Lumber Co.
MEMPHIS, TENN.

How Would You Cut This Case Front?

Eliminate Waste by Making Cuttings Large as Possible—Time and Quality of Product Main Factors

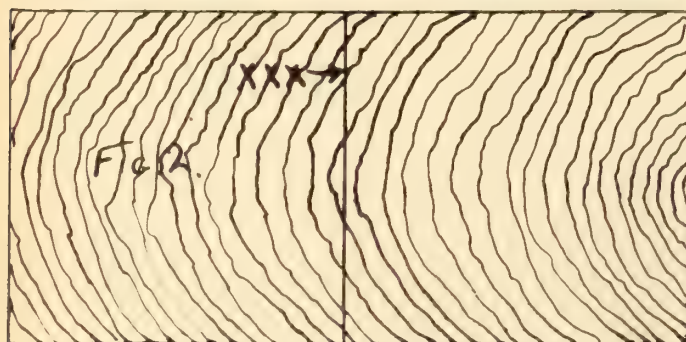
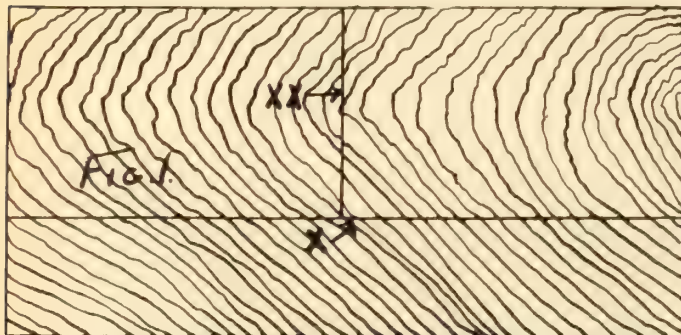
By A. E. Wolfe

The foreman of the veneer room should realize that when cutting and matching fancy figured veneer a large stock of various sizes and grains is a very valuable asset. It goes without saying that with a good assortment to choose from, one can select a log or flitch that will cut advantageously for the work in hand.

That a large number of woodworkers do not give sufficient attention to the cutting and matching of veneers can readily be seen by examining the veneered work that is being placed on the market, or by watching the veneering operations as performed in many of our factories. This phase of veneering is of prime importance and it is hard to understand why it should not receive more attention than it does. Not only can better results be secured, but the work can be laid out and planned in such a way that a considerable saving would be effected both in time and material.

Example of Economical Cutting

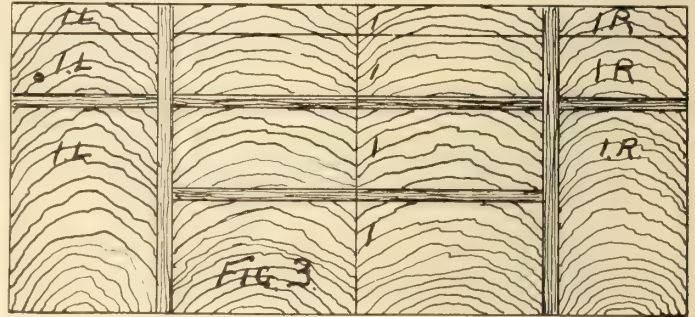
Let us suppose that our bill calls for the veneering of fifty case front surfaces similar to the one shown in sketch No. 3. The centre part of this surface is 30 x 20 in., the outer parts, right and left, are 10 x 20 in. The log or flitch chosen is 43 inches in length and 16 inches in width and contains 100 sheets of veneer showing a wide variation in grain. Our problem is to cut this material to the best advantage and with as little waste as possible and to so figure that the cuttings can be used to advantage on this or some other bill of work.



Showing variation in grain found in flitch

As indicated in sketch No. 1, the upper side of the log or flitch shows a variation in the grain on one edge of about 5 in. The first step would be to take 50 sheets from the upper side of this flitch and cut them as shown

as "X" Fig. 1. By doing this the cuttings are left as large as possible and could be worked to advantage on either this or some other job. By making cut as shown as "XX," we would secure the hundred pieces necessary for the outer ends of the case front.



Case front to be matched and veneered

The under side of the log has a good grain, showing a figure across the entire surface, as indicated by sketch No. 2. These remaining sheets will be trimmed to size and cut as indicated as "XXX." Now by reversing each of these sheets in rotation we will secure a well matched front and in cutting this stock we have reduced the waste to a minimum as the cuttings remaining can be used elsewhere.

Cores as Large as Work Allows

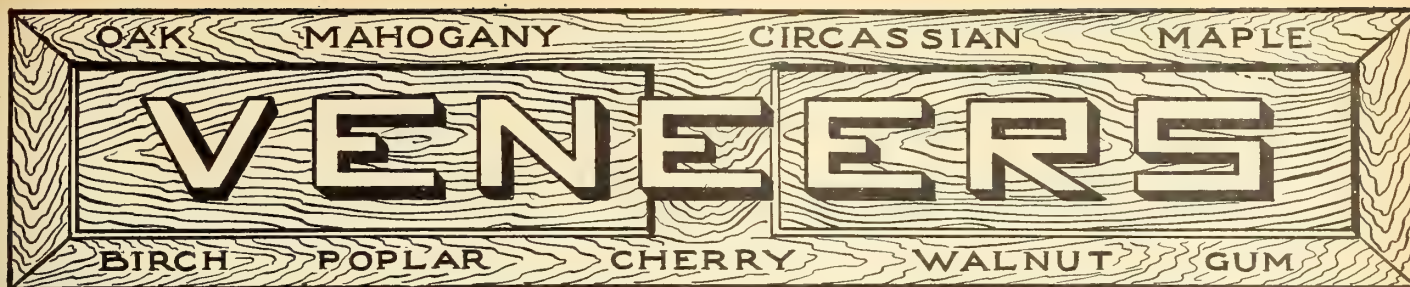
Where swell fronts and hand sawn cores are used the centre joint should be jointed and taped before being cut to size, then the stock should be marked and numbered as shown in the third sketch. If the bill calls for ordinary flat fronts, the core stock should be gotten out the full size of the required front and veneered as suggested before being cut to the required sizes. This method not only affects a saving in time and material but a lot of confusion and delay in the veneer department is avoided. Before cutting the front all the pieces should be carefully marked so that no trouble will be experienced in matching the different pieces when the case is being put together in the assembling department.

Veneer and Panel Manufacturers Meet

The Veneer and Panel Manufacturers' Association held a successful convention in Chicago June 17th, 1919. The number of members in attendance was very large and the results achieved were very gratifying. The address of the president, Mr. S. B. Anderson, Anderson-Tully Co., Memphis, Tenn., appears elsewhere in this issue.

Dowel Machines for Britain

The W. S. Hawker Manufacturing Company, Dayton, Ohio, manufacturers of the Universal Adjustable Cutter Heads and the Money Maker Adjustable Rod and Dowel Machines, report they have shipped quite a number of these machines to producers in Britain.



VENEERS of QUALITY

ROTARY CUT—MACHINE DRIED

The following Stock on hand ready for shipment;

WHITE OAK Sheet Stock				YELLOW PINE Sheet Stock				RED GUM Sheet Stock			
		Wide	Long			Wide	Long			Wide	Long
80,000'	1/20"	8-36"	48-104"	100,000'	1/15"	8-36"	48-140"	125,000'	1/20"	8-36"	48-104"
125,000'	1/16"	8-36"	48-104"	150,000'	1/8"	6-36"	36-104"	200,000'	1/16"	8-36"	48-104"
100,000'	1/8"	6-36"	36-104"					225,000'	1/8"	6-36"	36-104"
RED OAK Sheet Stock				SAP GUM Sheet Stock				CYPRESS Sheet Stock			
		Wide	Long			Wide	Long			Wide	Long
150,000'	1/15"	8-36"	48-104"	350,000'	1/20"	8-36"	48-104"	100,000'	1/16"	8-36"	48-104"
175,000'	1/8"	6-36"	36-104"	400,000'	1/15"	8-36"	48-104"	200,000'	1/8"	6-36"	36-104"
POPLAR Sheet Stock				SAP GUM Log Run				ASH Sheet Stock			
		Wide	Long			Wide	Long			Wide	Long
125,000'	1/20"	8-36"	48-104"	170,000'	3/16"	6-36"	36-104"	84,000'	1/20"	8-36"	48-104"
175,000'	1/15"	8-36"	48-104"	250,000'	1/4"	6-36"	36-104"	76,000'	1/15"	8-36"	48-104"
150,000'	1/8"	6-36"	36-104"					104,000'	1/8"	6-36"	36-104"

We have four million feet of dry lumber on our yard at Helena, Arkansas, ready for prompt shipment

Your Orders will be given "P-J" Service

We solicit your inquiries

General Offices
Memphis, Tenn.

PENROD-JURDEN COMPANY

Mills
Penjur and Helena, Ark.



Walnut has played its part both in usefulness and beauty from the butts of rifles to the stately, beautiful furniture which has pleased so many, yet none has proven better than Penrod Walnut; its beauty and soundness will win your approval immediately. We can make prompt shipments and you are assured of a complete order of walnut that comes up to its reputation in every way.

Penrod Walnut and Veneer Co.
Kansas City, Missouri, U. S. A.

Gluing Veneer at High Moisture Contents

It is common practise among plywood manufacturers to dry veneer down to very low moisture contents before gluing it. The object in doing so apparently is to prevent shrinkage of the veneer and consequent marring of the appearance of the finished panel. The drying is done in plate redriers, textile driers or similar apparatus, and adds appreciably to the cost of manufacturing panels.

That such preliminary drying may not be necessary is indicated by the results of a recent investigation by the Forest Products Laboratory. Veneer panels were glued with casein glue at various high moisture contents (some over 50 per cent.) and in various tests proved as strong and as desirable as those made under drier conditions. In fact, in the moisture resistance tests a considerable proportion of the veneer which had been dried before gluing showed signs of failure, whereas veneer glued at a moisture content of 15 per cent. or higher gave practically perfect results. Panels made at high moisture contents checked if dried too rapidly, but this difficulty could be avoided by proper operation of the kiln.

It seems possible, therefore, that the cost of producing panels of certain kinds may be very materially lessened through the use of water resistant glue and the reduction or even elimination of preliminary drying. Very dry veneer is more likely to break or split than damp veneer; an additional saving is therefore possible through a reduction of waste.

The use of moist veneer, of course, is not practicable for some purposes, but it is quite certain that much of the veneer which is now being painstakingly dried

before gluing might advantageously be glued at a higher moisture content.

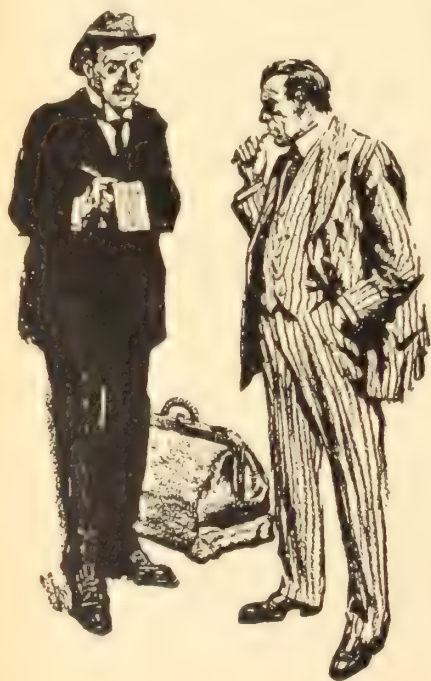
Standardization of Lumber and Mouldings

The Retail Lumber Dealers' Association of the State of New York adopted, at their annual meeting, a resolution referring to the standardization of lumber and mouldings. Recently they made a statement to the effect that: The resolution adopted by this Association at the last annual convention and later brought to the attention of the American Lumber Congress and the several associations of manufacturers is bearing fruit. The idea has met with the approval of many factors in the lumber industry with the result that the following resolution was adopted by the American Lumber Congress:

"Resolved, that it is the sense of this Lumber Congress that there should be uniformity of sizes in all lumber and mouldings manufactured in the United States and that for the accomplishment of this purpose the secretary-manager of the National Lumber Manufacturers' Association be requested to call a meeting of the proper representatives of all associations represented in this congress at Chicago within sixty days from this date."

In accordance with this resolution, a meeting was called for Monday, June 30th, at the Congress Hotel, Chicago, at ten o'clock.

The Western Pine Manufacturers' Association has circularized the membership of that body with a copy of the resolution adopted by the New York Association and express approval of it.



Service Without a Doubt

An order placed with us is in every way dependable. Our stock of Veneers, Mahogany, American Black Walnut, Quartered Oak, Figured Quartered Gum and plain woods is complete and of the finest quality. Our service is sure to prove entirely satisfactory. We can ship your order exactly as you desire, whether you call and make your own selections or write or phone, the same high standard of quality will prevail. Let us know your needs.

Toronto Veneer Company

1100-1104 Queen St. West.

Toronto, Ontario

Prompt Shipments from Large Chicago Stock

of

ROTARY CUT POPLAR

Gum, Birch, Yellow Pine, etc.

QUARTERED SLICED and SAWN OAK

SLICED and SAWN MAHOGANY

SLICED AMERICAN WALNUT

Prima Vera, Vermillion, White, Holly, etc.

veneer MANUFACTURERS CO.

Fulton and May Streets

CHICAGO, ILL.

WALNUT and Quartered **veneers**
White Oak

AND LUMBER

Prompt delivery

LONG-KNIGHT LUMBER COMPANY

INDIANAPOLIS, IND.



Are You Interested in Export of Wood Products?

The names of the firms making the following inquiries, together with their addresses, may be had by applying to the "Canadian Woodworker." Be sure and quote the reference number when writing.

1327. A Liverpool firm are prepared to place orders for large quantities of broomhandle blanks.

1334. A Liverpool importer would like to hear from Canadian shippers of wooden toys.

1335. A Liverpool importer is in a position to place orders in carload lots for washboards, clothespins and household woodenware.

1336. A Liverpool firm make inquiry in order to establish Canadian connections for roll top desks and office chairs.

1347. A Glasgow firm ask to be placed in touch with Canadian exporters of household woodenware.

1348. A Glasgow firm are interested in household woodenware.

1351. A Glasgow timber firm are open to buy hickory handles and coupling poles.

1366. A London firm of timber merchants and importers report a large market for box boards and ask for address of Canadian manufacturers.

1377. A north of England firm are open to purchase supplies of domestic woodenware from Canadian manufacturers, from whom they invite quotations. Requirements include paste and bread boards, clothespegs, rollingpins, wooden spades and toys.

1384. A Glasgow firm ask to be placed in communication with exporters of white wood-pulp boards, leatherboards, greyboards, also wood-pulp boards lined on one side with white enamelled paper.

1385. A Glasgow firm ask to be placed in touch with exporters of boxboards.

1386. A Glasgow firm ask to be placed in communication with exporters of box shooks in inside sizes, 11¼ by 8¼ by 1½ by 6¾ by 2. Sides 3/16-inch, ends ¼-inch thick.

1387. A Glasgow firm of timber merchants and importers want to hear from reliable shippers of Quebec pine, bends, sidings and boards, S2S.

1390. A New York house wishes to secure supplies of white oak staves in Canada.

1391. A firm in Leghorn wish to obtain exclusive agencies for Italy and the colonies in Canadian pianos, player pianos, organs, phonographs, and other musical instruments, musical rolls for player pianos, typewriters, bicycles and sewing machines.

1392. A Turin house is interested in working on a commission basis with Canadian firms prepared to export wood-pulp, lumber and paper.

1399. A firm in Turin desires to buy Canadian pianos and player pianos, wood for piano construction, piano actions and piano felts.

1421. A firm of chair manufacturers in Lancashire are open to purchase large quantities of veneer chair seats from Canada.

1432. A Cape Town firm of commission agents, with long experience in the piano trade, are prepared to take up a Canadian agency in a line of pianos.

1495. A large furniture store in Johannesburg, South Africa, wishes to buy Canadian pianos. They must be suitable to a hot and dry climate.

1496. A Johannesburg, South Africa, firm wishes to get ice cream freezers made in Canada.

1497. A large establishment in Johannesburg selling house furnishings would like to receive Canadian catalogues of all kinds of household furnishings with a view to making purchases in Canada.

1510. A firm in Port Elizabeth, Cape Colony, South Africa, desire to correspond with Canadian manufacturers of finished timbers.

1513. A firm in Port Elizabeth, Cape Colony, South Africa, desire to correspond with Canadian manufacturers of hardware, cart builders' and wagon builders' material, leather, finished timbers, etc.

1595. A firm of importers in London, England, wish to get large supplies of the mechanism of swing office chairs with a tilting action.

1597. A firm of Larnaca, Cyprus, desire to establish

business relations with first manufacturers of textiles, cartridges, shot, gunpowder, etc.

1620. A Cape Town manufacturers' representative asks for catalogues and price lists from Canadian manufacturers of cart and carriage material, all kinds, with a view to taking up the agency for same.

1622. An Antigua importing firm would like to be put in communication with Canadian firms exporting chairs, tables, iron bedsteads, beds and mattresses.

1651. A Belgian firm are interested in receiving quotations, if possible c.i.f. Antwerp, from Canadian manufacturers of low-priced household articles and utensils, as well as moderately-priced furniture and woollen mattresses. Correspondence in French or English.

1666. A Sheffield firm make inquiry for hickory pick handles.

1519. A Midlands company wishes to place orders for regular supplies of wood shanks as used by boot and shoe manufacturers, and invites quotations from Canadian manufacturers. Samples available at the Commercial Intelligence Branch, Department of Trade and Commerce, Ottawa.

1531. A Roubaix house wants to import Canadian pianos.

1544. A firm in Tokyo, interested in the manufacture of pencils, would be glad to receive samples and quotations on the best quality of Canadian pencil cedar, similar to that used in the manufacture of pencils in the United States and Canada.

1555. A Liverpool firm make inquiry for wooden wheels for toy manufacture.

1556. A Sheffield firm make inquiry for hammer handles.

1562. One of the largest packing houses in the Argentine Republic are open to import meat boxes from Canada.

1563. A large English freezing establishment in Buenos Aires which specializes in corned beef, is prepared to consider quotations on two different sized boxes.

1564. A company in Buenos Aires owning two large plants, at present using poplar shooks made locally, are prepared to consider quotations for shooks.

1570. A firm in Leicester, England, wish to place orders for regular supplies of wood shanks as used by boot and shoe manufacturers, and invite quotations from Canadian manufacturers.

1572. A company in Christiania, Norway, with New York office, desire to establish connections with reliable firms in Canada exporting fine qualities of lumber, inlaid floors, sanitary outfits, heating system hardware, special kitchen outfits, and other articles to complete private buildings and factories. This firm propose to open branches in Finland, Denmark and Sweden.

1584. The manager of an old-established importing firm in Sydney, N.S.W., is visiting the United States and Canada with a view to making arrangements to secure supplies of the following kind of goods: Furniture of all kinds which can be shipped knocked down or folded flat, including chairs, camp beds and stretchers, music stools, bureaux, office furniture, tables, folding go-carts; also refrigerators, carpet sweepers, furnishing dry goods, aluminium and enamelled ware, electro-plate, cutlery, hardware for cabinet-makers and upholsterers, such as handles, locks, castors, springs, etc.

1585. A representative of an Australian house is visiting Canada with a view to securing agencies for gramophones, novelties, toys branded or special goods of all kinds.

1590. A London firm of piano manufacturers and dealers desire the addresses of Canadian manufacturers of piano actions and keys.

1289. A Liverpool firm are interested in Canadian exports of broom handles and dowels, etc.

1290. A Liverpool timber broker wishes a Canadian connection for the distribution of box shooks.

1294. A Liverpool importer wishes to receive offers of birch or maple skewers, 4½-inch to 11-inch, in carload lots.

1296. A Liverpool firm are interested in washboards.

1297. A Liverpool firm desires to hear from Canadian exporters of clothes pegs.

1306. A firm in London, Eng., requires cedar sticks in lots of 100 gross and upwards.

1288. A Liverpool firm would like to receive carlot offers of maple flooring.



*The Source of
N. B.
Quality Veneer*



WRITE FOR SAMPLES
AND PRICES

It is from such logs as these that we produce our Rotary Cut Veneer. Each log that is manufactured into Rotary Cut Gum Veneer must be clear, sound, and free of knots.

Such logs are procured only by skilled selection from many thousand feet of timber, of which they are the very cream. Our two large band mills handle yearly over twenty million feet of timber, from which such veneer logs are carefully picked.

This tremendous opportunity for selection is one of the prime factors in the production of N. B. Quality Veneer.

Concentrate Your Purchases and Save Money
Through Buying

Figured Red Gum, Rotary Cut Gum and Poplar Veneer.

Sawed and Sliced Ash, Poplar and Gum Grand Piano Rims.

Sawed and Sliced Quartered Oak

IN CARS

with Band Sawed Hardwood Lumber

Carload buyers get closer prices, save freight on local shipments, and eliminate damaged goods.

NICKEY BROTHERS, INC.

MEMPHIS, TENNESSEE

Newsy Jottings of Interest

The Continental Upholstering Company was recently registered in Montreal.

Scarfe & Co., Brantford, Ont., varnish manufacturers, are making an addition to their factory.

Omer Quintal, Limited, was registered in Montreal recently. This firm was incorporated in 1917.

The Egan Phonograph Co. and the West Upholstering & Furniture Co. were recently registered in Toronto.

C. Harold Willis, Sarnia, Ont., contemplates the erection of an automobile factory in that city; cost about \$200,000.

T. A. Morrison & Co., Montreal, has been incorporated to manufacture and deal in building material of all kinds. Capital \$10,000.

The B. C. Mfg. Co., Limited, New Westminster, B.C., have taken out a permit for the erection of a new export plant at Queensboro.

A small fire occurred in the plant of Jones Bros. & Co., manufacturers of show cases, Toronto, Ont. The damage done was very slight.

Burnett & Bone, Alliston, Ont., have leased suitable premises and intend to install equipment for manufacturing a line of wood products.

H. C. Johnson Co., Limited, Montreal, has been incorporated to manufacture and deal in wood products of all kinds. Capital \$20,000.

A contract for the factory of the Royal Broom Co., Ingersoll, Ont., has been let to the Frid Construction Co., Hamilton; cost \$18,000.

Fire destroyed the plan and planing mill of the Tobique Lumber Co., Limited, Eel River Crossing, N.B. The loss is fully covered by insurance.

F. W. Duncan, 1801 Ontario St., Montreal, has made application to the Montreal City Council for permission to construct a saw and planing mill.

The plant of L. B. Amos, Doaktown, N.B., woodworker and contractor, was recently destroyed by fire. The loss was partially covered by insurance.

The Union Navigation Co., Limited, Montreal, has been incorporated to build, equip and furnish vessels and boats of all descriptions. Capital \$50,000.

W. H. Duffy Sons, Limited, Hillsboro, N.B., have been incorporated to manufacture and deal in furniture and house furnishings. Capital \$75,000.

United Aircraft of British Columbia, Limited, Vancouver, B.C., has been incorporated to manufacture and deal in aeroplanes and other forms of aircraft.

La Compagnie Alex. Carrier, Limitee, Quebec, P.Q., has been incorporated to carry on a lumbering and general woodworking business. Capital \$49,900.

Beauchemin and Rivet, Limitee, Amos, Que., have recently been incorporated to manufacture and deal in lumber and other wood products. Capital \$49,000.

Lount Engineering Co., Limited, Winnipeg, Man., have been incorporated to manufacture and deal in lumber and wood products of all kinds. Capital \$60,000.

The Masterola Co., Limited, Winnipeg, Man., have been incorporated to manufacture and deal in phonographs and other musical instruments. Capital \$10,000.

Fire visited the Richards Mfg. Co., Limited, White's Brook, N.B., completely destroying the plant and planing mill. The loss is fully covered by insurance.

The Provincial Machine Co., St. Thomas, Ont., is being formed to manufacture phonographs and talking machine accessories; stock is being subscribed locally.

Fire recently occurred in the plant of the Canada Paint Co., Montreal, P.Q. The loss, which amounted to several thousand dollars, was fully covered by insurance.

Pratteophone, Limitee, St. Jerome, Que., have been incorporated to manufacture and deal in gramophones, pianos, and other musical instruments. Capital stock \$49,000.

The Province Furniture Manufacturing Co., Limited, Vancouver, B.C., has been incorporated to carry on business as furniture makers and woodworkers. Capital \$12,000.

The Beaver River Lumber Co., Limited, of Chilliwack, B.C., are constructing a saw, planing and shingle mill to replace the plant which was recently destroyed by fire.

A fire occurred in the planing mill of Jacob Kauffman, Limited, Kitchener, Ont. The fire was extinguished promptly, the loss being very slight and fully covered by insurance.

The New Method Broom Co., Limited, Winnipeg, Man., have been incorporated for the purpose of manufacturing and dealing in brooms, whisks and brushes. Capital \$50,000.

The Jefferson Glass Co., Toronto, are erecting a new manufacturing building. In connection with this building it is their intention to enlarge their present box making department.

The Melotone Mfg. Co., Limited, Winnipeg, Man., has been incorporated for the purpose of manufacturing and dealing in phonographs and other musical instruments. Capital \$5,000.

The Great West Lumber Mills, Limited, Winnipeg, Man., have been incorporated for the purpose of manufacturing and dealing in lumber, timber and all wood products. Capital \$100,000.

La Compagnie de l'Edifice Dandurand, Limitee, Montreal, Que., has been incorporated to manufacture and deal in builders' and contractors' supplies of all kinds. Capital stock \$100,000.

The National Standard Co. of Canada, Limited, Guelph, Ont., have been incorporated to manufacture and deal in any article made in whole, or in part, from wood, glass or fabric. Capital \$30,000.

The Lang Mfg. Co., Limited, Guelph, Ont., has been incorporated to manufacture and deal in wood, iron and steel and all products which these materials enter into. Capital \$40,000.

The top storey of the mattress factory owned by C. L. March, St. Johns, Nfld., was completely gutted by fire. A considerable quantity of machinery was destroyed. The loss is estimated at \$25,000.

Anger & Montgomery, Limited, Carman, Man., have been incorporated for the purpose of manufacturing and dealing in automobiles, trucks, carriages, and agricultural implements. Capital \$10,000.

Fire breaking out at the plant of James Davidson's Sons, Davidson, Quebec, recently, caused a loss of around \$7,500. The sawmill was not injured. Two cars of hay and some stables were burned.

The Sewing Machine & Electrical Supply Co., Limited, Montreal, Que., has been incorporated to manufacture and deal in sewing machines, electrical appliances, and automobiles. Capital \$20,000.

The Kingston Road Lumber Co., Limited, Toronto, has been incorporated to manufacture and deal in lumber, timber and other products of all kinds. Capital \$150,000. W. M. Miskelly is the manager.

The Three Rivers Lumber Co., Limited, Three Rivers, Que., has been incorporated to carry on the business of

Do You Know the Exact Labor Cost of Each Job in Your Plant? It is Vital That You Do Know

Orders by wire. We receive orders for our job cost recorders by wire, the following is an example received recently.

"Please ship us by express rush, three more of your job cost recorders."

The above is one of many orders we receive by telegraph and in the mail. These are from people who realize the importance of having the exact labor cost of each job, and we are trying to sell you the importance of it also. We illustrate one of our cost recorders and also a reduced facsimile of the margin of a job card, showing the time the job was begun and the time it was stopped.

The cost of installing these recorders is insignificant to what it is costing you to be without them; in short, they give you the exact amount of productive labor in your

E	Elapsed Time	CLOCK RECORD
2.2		S 15 9.2
		B 15 7.0
1.9		S 15 11.1
		B 15 9.2
.9		S 15 12.0
		B 15 11.1
3.4		S 15 15.4
		B 15 12.0
.6		S 15 16.0
		B 15 15.4

plant, in each department, the balance of your labor must be expense labor, and bear this in mind, the labor records on each job with our method **cannot be changed**, and when checked against the amount of labor you actually purchase, would likely be an eye-opener to you. Progressive and successful firms are buying these job cost recorders in quantities.

This method gives you control of your factory burden, it helps your workmen, it helps your foreman, and makes money for you. We do not understand how you can get along

without them, these days when labor costs are so high.



International Job Cost Recorder

International Business Machines Co. Limited

WINNIPEG:

227 McDermott Ave.

VANCOUVER:

110 Water Street

(TIME RECORDER DIVISION)

Royce and Campbell Avenues, TORONTO

FRANK E. MUTTON,

Vice-President and General Manager

HAMILTON:

108 Clyde Block

MONTREAL:

Sales Office:

212 McGill Street

(Also Makers of Dayton Scales and Hollerith Electric Tabulators)

manufacturers of and dealers in lumber and other wood products. Capital stock \$300,000.

The upholstery shop of A. E. Ball, Bloor St., Toronto, was slightly damaged by fire. The loss amounts to about \$600. The fire is believed to have been started by the workmen smoking during lunch hour.

Legare Automobiles of Saint Hyacinthe, Limited, Saint Hyacinthe, P.Q., have recently been incorporated to manufacture and deal in automobiles, trucks, carriages, furniture and woodenware. Capital \$100,000.

The Fire Marshal of Ontario reports that as a result of the fire protection propaganda the Ontario fire loss has been reduced, according to the May figures, 31 per cent. since 1918 and 42 per cent. since 1917.

Clarke Bros., Limited, Bear River, N.S., have commenced the construction of their new plant, comprising pulp mill, saw and planing mill and machine shop. This company was recently capitalized for \$2,500,000.

A fire recently occurred in the plant of the Victoria Lumber & Mfg. Co., Chemainus, B.C. Fortunately the blaze was extinguished before any serious damage had been done. The mill was closed down for part of a day as a result.

The Aircraft Mfg. Co., of Canada, Limited, Montreal, Que., has been formed to manufacture and deal in aircraft of different forms and to create and expand industrial activities for the making of aircraft accessories and allied industries.

The Gilbert Plains Brick Co., Limited, Gilbert Plains, Man., were recently incorporated. Among other powers invested in this company are to purchase, lease, manufacture and deal in timber, lumber and all wood products. Capital \$100,000.

The Seamen, Kent Company, at Meaford, have received a large order from Liverpool, England, for hardwood flooring. They have found labor very scarce in Meaford and every effort has been made to induce help to come in from outside points.

The Stickney Motors, Limited, St. Paul, Minn., are entering into an agreement with the City Council of Peterboro, Ont., to take over the plant vacated by the Renfrew Mfg. Co., and to engage in the manufacture of farm tractors, motor trucks, etc.

The Alberta Pioneer Canning Co., Limited, Edson, Alta., were recently incorporated. One of the powers conferred by the charter was to manufacture barrels, boxes, kegs and other forms of packages, whether of wood or other materials; capital \$40,000.

The Allied Packers of Canada, Limited, Toronto, Ont., have recently been incorporated. Among other powers granted, were to manufacture and sell packages, receptacles and containers of all kinds and to build ships, barges and vessels, etc. Capital \$7,500,000.

Sidney Mills, Limited, Sidney, B.C., have found it necessary to install additional equipment in their box factory. The new machines consist of a 6-inch Merston band resaw, an automatic tumbler saw for cut off saw, and a circular rip saw for the sizing of box lumber.

The city of Ingersoll is building a two-storey brick factory for the Royal Broom Company. The size of building is 40 x 70 ft. and will cost in the neighborhood of \$18,000. The ratepayers of Ingersoll recently guaranteed the bonds of this company to the extent of \$10,000.

The Hammond Cedar Mill, Hammond, B.C., have installed the following machinery: a Yates power-feed rip saw, a Yates fast-feed moulder, a six inch planing mill resaw and a Yates No. 10 timber sizer. A duplicate set of trimmers is also being placed in the plant.

Brunswick-Balke-Collender Co., of Canada, Limited, Toronto, manufacturers of phonographs and billiard tables, are adding a new addition to their factory. The new building is 98 x 40 ft., one storey, and of mill and brick construction, and will be used for storage and shipping.

The Gendron Mfg. Co., Limited, Toronto, have secured a ten-acre site adjoining the C. N. R. tracks and contemplate the erection of a modern plant. The plans embrace a group of six buildings 250 x 80 ft., and when completed the plant will be one of the finest of its kind in Canada.

La Reine Lumber Co., Limited, Quebec City, have been incorporated to manufacture and deal in lumber, timber, pulp

and wood products of all kinds and to take over as a going concern the manufacturing business known as Welford, La-liberte & Frere, St. Remi, P.Q.; capital \$49,000.

The Maple Leaf Mfg. Co., Limited, Ottawa, Ont., has been incorporated to take over the machine plant of the Machinery and Munitions Board, Limited, and the Windsor plant of the Minard Motor Truck Co., Limited. This latter firm has been manufacturing motor trucks since 1908.

The Toronto Housing Commission has made a good start on its program of 500 houses for 1919. One hundred houses are under construction. Land has been obtained for 200 more and the Commission has options upon sufficient property to permit of the erection of the balance.

The Moose Lake Lumber Co., Limited, with headquarters granted a charter to operate lumber, saw and planing mills, etc. Among the incorporators of the company are John Ough, Alfred W. Herrington, Bruce Williams and others, of Cobalt.

The launching of the 1,500-ton wooden schooner Gunn at the Cholberg shipyards at Victoria, B.C., marks the practical completion of the first vessel constructed on the Pacific coast of the Dominion for Norwegian registry. Two additional ships of the same type are being built at the Cholberg yard.

Falconers, Limited, Winnipeg, Man., have been incorporated for the purpose of taking over as a going concern the business of Chas. C. Falconer, Winnipeg, and to manufacture and deal in building material, agricultural implements, pianos, phonographs, trunks, automobiles and furniture. Capital \$60,000.

The following Nova Scotian firms are constructing wooden schooners: McNeil Bros., New Glasgow, N.S., are building a 400-ton wooden vessel at Tusket, N.S.; the Scotia Shipbuilding Contractors, Yarmouth, N.S., are working on a 400-ton vessel; the E. A. LeBlanc & Co., Wedgeport, N.S., a 150-ton vessel.

The Frontier College has been incorporated, with head offices in Toronto, to promote the attention and welfare of Canadian frontiersmen, lumberjacks, miners and other working men. Among the incorporators are Alfred Fitzpatrick, educationalist; R. C. Dearle, lecturer; L. E. Westman, editor, and David A. Dunlop, barrister, all of Toronto, and James Playfair, of Midland, shipbuilder.

The Allied Aeroplanes, Limited, Brantford, Ont., have been incorporated to manufacture and deal in aeroplanes on a commercial scale; also to manufacture and deal in automobiles, trucks and other vehicles. Capital \$40,000. It is the intention of the company to run an aerial jitney, and two machines will be put into service at an early date. Lieut. G. Russell, late of the Royal Air Force, has been appointed official pilot.

Doheny, Quinlan & Robertson, Limited, Montreal, have recently been incorporated. Among the powers conferred on this company were to manufacture and deal in timber, lumber, and all manufactures of wood and to acquire or build ships, barges, tugs, and other vessels. The incorporators are H. Doheny, H. Quinlan and A. W. Robertson, contractors; G. A. Campbell and J. Kerry, all of Montreal; capital \$2,000,000.

The Canadian Co-operative Building Society, Limited, have been granted a charter, with headquarters in Toronto, and the object of the organization is to buy, sell, transfer, hold and mortgage and possess real estate, to erect thereon buildings of every kind and to buy, sell and manufacture materials of every description. The incorporators are L. H. Starrett, L. D. Corbett, Edward H. Wilson, Claude Warrington and others.

The Prince Albert Lumber Company, Prince Albert, Sask., of which A. L. Mattes is manager, have practically cut all their timber and disposed of their saw and planing mill. They expect that it will be moved west, but as to the location the company are unable at present to state. The prince Albert Lumber Company have operated their plant at Prince Albert for some thirteen years and the output has been all marketed in western Canada.

The Hoover Vacuum Cleaner Company is erecting a large plant in Hamilton. The front portion of the building will be 75 x 80 feet and four storeys in height. The factory at the rear will be single storey, 100 x 1,000 feet, saw-tooth roof construction. It is not the intention to install a wood-

GUM

Figured and Quartered Stock

WHILE we are not exclusive manufacturers of gum, the quality of our timber bought years ago when the selection was unlimited, enables us to justly claim a distinctly superior product. Every feature of our manufacturing facilities is so designed and arranged and maintained that the full quality inherent in the timber is brought out in the manufacturing operation.

Then again we have for over thirty years made a close study of the best methods of handling southern hardwoods, both as to their physical characteristics and our immediate contact with our customers. The result is 100% quality and service which can be relied upon to function consistently in the interests of the factory buyer.

Our earnest advice is that you buy now while our stock is still in fair condition.

ANDERSON - TULLY COMPANY

Memphis, Tenn.

Exponents of Golden Rule Quality

working plant at present, though a small band saw may be purchased for cutting crate material.

The R. H. Howes Construction Company, Meteghan River, N.S., have about completed another three-masted schooner. This will be the fourth vessel to be completed by this company. The other schooners have been rated "Star A.1." for twelve years, by the British Lloyds, and are certainly a credit to the builders.

Montreal Crushed Stone Company, Limited, Montreal, P.Q., have recently been incorporated. Under the charter this company has been granted wide powers, among others to manufacture and deal in lumber, timber and products and to buy, construct and operate sawmills, planing mills and other factories. Capital \$2,000,000.

The men employed in the plants of the Preston Furniture Co., Canadian Office & School Furniture Co., the Buffalo Sled Co., and the Crown Furniture Co., all of Preston, went on strike recently. The men asked for a nine-hour day at the ten-hour rate. At a meeting of the strike committee and the manufacturers, the manufacturers agreed to give the men what they asked for, the men returning to work. The strike lasted a day and a half.

The Canadian Soo Lumber Co., Limited, has been incorporated with a capital stock of \$500,000 and head offices in Sault Ste. Marie, Ont. The company is empowered to buy, sell and operate timber lands and to manufacture and deal in lumber, timber and all and sundry wood articles. Among the incorporators are William Herman Rath and Peter P. DuKet, lumbermen, of Chicago, and Geo. A. A. Allen and James McEwan, of Sault Ste. Marie, Ont.

The city of Victoria, B.C., is taking advantage of the ers at Cobalt, Ont., and a capital stock of \$40,000, has been government loan of \$300,000, which is now available for housing purposes, and is proceeding with the plans for the construction of a number of houses. Under their agreement with the government the maximum loan to an applicant for acquiring the site and construction, or for construction only, is \$4,500. Payments are extended over a period of twenty years.

The Kindel Bed Co., Limited, Stratford, Ont., are building a new addition to their plant. The new building will be three storeys, brick, 185 x 75 feet. In addition it is planned to erect a shipping shed 42 x 70 feet. It is the intention of the Kindel Bed Company to give all employees who have been with the firm for three months a week's vacation with full pay. Those who have been with the company for less than three months will receive a week's holiday and one-twelfth of a week's wages for each week they have been in the employ of the company.

A special bonus will be paid to the returned men employed at the artificial limb factories of the Soldier's Civil Re-establishment. The bonus, which will be paid with their regular wages, is graduated, as follows: Men receiving 50c to 55c per hour will receive 10 per cent. increase; men receiving 60c to 65c per hour will receive 8 per cent. increase; men receiving 70c per hour will be paid an extra 6½ per cent. The granting of this bonus is another of the direct benefits which the men have received since the shop committee was first initiated by Major R. M. Coulthard.

Fire destroyed the plant and stock of Gillies Bros., Braeside, Ont. The exact origin of the outbreak is unknown, though it is believed to have been started by overheated bearings, presumably on the re-saw. Owing to the rapid manner in which the fire spread, the fire-fighting apparatus at the plant was practically useless. The C. P. R. Depot and freight sheds, together with some box cars, were wiped out at the same time. A large part of the loss, which amounts to between \$400,000 and \$500,000, was covered by insurance. It is not known when the company intend to start re-building.

The Canada Furniture Manufacturers, Limited, Woodstock, Ont., recently gave their employees a 10 per cent. advance in wages. This is in addition to the reduction of working hours which took effect last April. Mr. J. B. Shaw, the managing director, has realized for a long time that furniture workers were not paid a wage that compared favorably with those received by skilled workers in other lines, but under competitive conditions the selling price of furniture was so low that it was out of the question to pay higher wages. Through co-operation these conditions are gradually being improved and it is the desire of the Canada

Furniture Manufacturers, Limited, that their workmen should benefit in the improved conditions. The advance in wages is effective in all their factories.

The Listowel Housing Co., Limited, is a new organization which has been granted a provincial charter. The capital stock is \$40,000, and the headquarters are at Listowel, Ont. The incorporators are Max K. Becker, Wm. Climie, J. H. Bender, Aaron Ringler, John M. Campbell and F. W. Hay, all of Listowel. The objects of the company are to acquire land and erect thereon dwelling houses of modern size and improvements, to be sold at moderate prices, or to be rented at moderate rates. The company will come under the purview and be subject to the provisions of the housing act accommodation.

The wooden cargo vessel "C-16" of 1500 tons, was launched recently by Fraser, Brace & Co., from their yard in Cote St. Paul, Que., this making the sixth vessel of a series of eight, which the firm are building for the French Government. Three of them were launched in March last. The dimensions of these ships are as follows: 1,500 tons; length, 202 ft.; 40 ft. 6 ins. beam; 17 ft. moulded depth. They are equipped with twin screw engines, Scotch boilers; crew quarters, 24 men; equipped with six cargo winches. The eight vessels are to be delivered this summer. They are all built of British Columbia fir.

The question of the standardization of conditions among carpenters, woodworkers, cabinetmakers and joiners, with regard to hours of work and pay, was taken up at the convention of the Provincial Council of the United Brotherhood of Carpenters, Woodworkers and Joiners, recently held in Kitchener. It was agreed that the hours of work and pay in the woodworking industry are more unsatisfactory than those of any other trade. An agreement was drafted, which if put into practice, would better these conditions. A resolution was passed that all woodwork and trim bear the carpenter's union label. Carpenter members are hereafter refusing to erect anything unless it bears this union label. The Provincial Council is in favor of the nationalization of the medical profession, and went on record to that effect. They propose to memorialize the Dominion and Provincial Governments, also the medical trade council of Ontario and the Trades and Labor Council of the Dominion. The convention further decided that a thorough campaign of education to train and educate the public along matters of hygiene and the conservation of health should be undertaken by the State.

Suggested Policy of the Navy League of Canada

1. To disseminate among the people of Canada a knowledge of the necessity and use of sea power as the keystone of Empire and National defence and commercial prosperity.
2. The advocacy of a policy that Canada shall assume her proper share of the cost and maintenance of protecting her own trade routes and coast defences.
3. The advocacy of a marine policy that will tend to build up our Mercantile tonnage.
4. The advocacy of the establishment of a naval reserve force composed of Canadian officers and men who have served in either the Imperial or Canadian Naval forces.
5. The support of all just claims of officers and men of the Royal Canadian Navy and its auxiliaries with regard to pay and pensions, and that merchant officers and men in times of war be put on an equal footing with regard to pay and pensions with officers and men of the Royal Canadian Navy.
6. The support of sailors' institutes in Canadian ports to better the conditions of merchant seamen when ashore.
7. The application of steady pressure upon Parliament and the Government for a better and more efficient administration of the Department of Naval Service, and the abandonment of the present system of the portfolio of Marine, Fisheries, and Naval Defence being under the Minister.
8. The application of steady pressure upon all people enjoying the Canadian franchise to see to it that our public men and Members of Parliament insist upon it that all matters pertaining to our maritime policy shall be free from political bias.
9. The encouragement and extension of Naval Colleges and of the Boys' Naval Brigade movement, and the establishment of proper training institutions, with a view to the preparation of boys and men for a seafaring career to the ultimate end that all Canadian ships shall be manned by British-born and the elimination of aliens from the Mercantile Marine.

Mississippi Delta

Gum

Quartered and Plain
Red and Sap

Oak

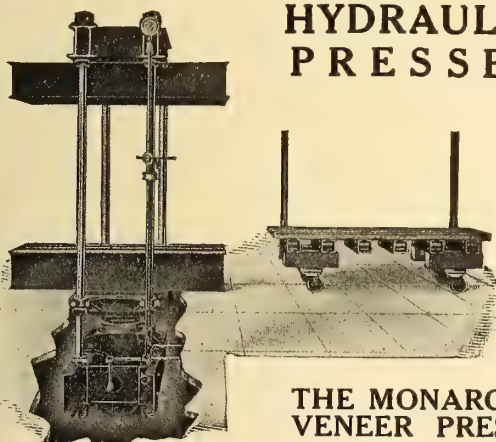
Quartered and Plain
Red and White



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CINCINNATI, OHIO

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THE MONARCH
VENEER PRESS

CONSIDER THESE FEATURES.

Heavy Steel Strain Rods.	Double Steel Head and Base.
Steel Cylinder and Detachable Saddle.	Quick-acting Pump, Rigid Construction.
Cylinder Repackable without removing Ram.	Operating Valve at Press.
	Improved Retainers.

OUR HYDRAULIC VENEER PRESSES are built to suit all requirements. All proportions are very liberal, while material and workmanship are the best throughout.

Pressure of 100-lbs. to the square inch is applied to the veneering surface. Stock is handled by the renowned retainer system, unsurpassed for both efficiency and economy.

With our process, but five minutes intervene from the time the car enters the press until the stock is released and the press is ready for the next load.

Catalogue, giving full particulars as to sizes and specifications, free on request. We also manufacture all kinds of special Hydraulic Presses to order. Write us concerning your requirements.

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- 2 Cars 1" Elm Crating.
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- 1 " 4" No. 1 Com. and Btr. Hard Maple.
- 1 " 4" No. 1 Com. and Btr. Birch.
- 3 " 1" No. 3 Com. and Btr. Birch.
- 2 " 1" No. 3 Com. and Btr. Basswood.

Can also furnish $\frac{1}{2}$ ", $\frac{5}{8}$ " and 1" Spruce Crating.

Canadian General Lumber Company, Limited

712 Bank of Hamilton Bldg.
TORONTO

MONTREAL OFFICE: 203 McGill Bldg.

Selling

Graves, Bigwood & Co.'s Lumber, Lath and Box Shooks

Personal Items

Frank A. Kent, of Seaman Kent Co., Limited, Toronto, attended the twenty-second annual convention of the National Hardwood Lumber Association, which was held in Chicago on June 19 and 20.

Mark Rowe, of the Canadian Furniture Manufacturers, Limited, Woodstock, Ont., was one of the directors elected at the annual meeting of the Canadian Credit Men's Association held recently in Toronto.

John R. McBurnie recently died in Toronto. Mr. McBurnie came to Canada 35 years ago and since that time has been foreman with the Samuel May Company, Toronto, Ont., manufacturers of billiard tables.

J. D. McCormack, general manager of the Canadian Western Lumber Company, Fraser Mills, B.C., arrived in Toronto recently to spend a few days with L. D. Barclay, eastern representative of the firm. Mr. McCormack called upon a large number of friends while in Toronto.

Secretary McLellan, of the New Brunswick Lumbermen's Association, recently returned from England, where he was in the interests of the association. He predicts great things for the New Brunswick product and says that there will be fine opportunities for a good market for many years to come.

Geo. Dickson, who recently returned from overseas, has been appointed in charge of the planing mill of the Sidney Mills, Limited, Vancouver Island. Mr. Dickson was at one time superintendent of the box factory of the Cameron Lumber Co., Victoria, B.C., and has a reputation of being one of the best informed men in his line in B. C.

Wm. Hutchinson died recently in Ottawa. Mr. Hutchinson was for many years commissioner of exhibitions for the Dominion of Canada. His duties took him all over the world. He was in charge of many of the big American expositions at Buffalo, St. Louis, San Francisco and elsewhere.

John A. McDonald, Amherst, N.S., president of Amherst Piano Co., Limited, was the choice of a committee of workmen representing six unions to act as arbitrator in the Halifax strikes. Mr. McDonald was also chosen to act for the Amherst Federation of Labor in case the manufacturers would consent to arbitrate. Despite the fact that he is a

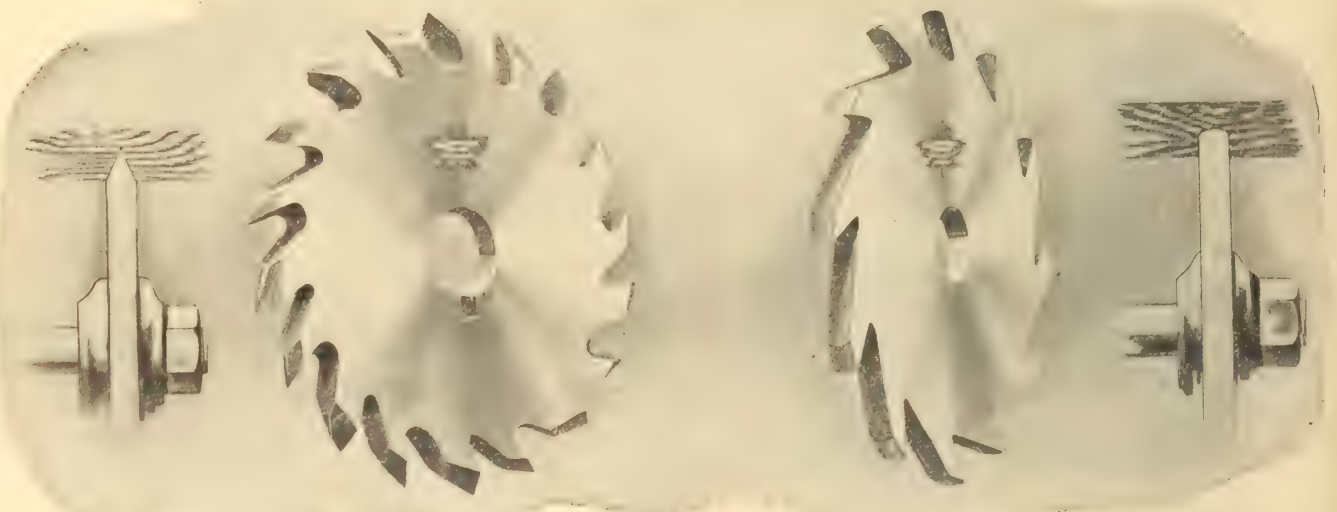
large employer of labor in Nova Scotia, the appointment of Mr. McDonald as representative of labor's interests in Halifax was received with much satisfaction among the workmen. In Amherst Mr. McDonald's is the only concern whose men are not on strike.

Dr. Murdock M. Graham, of Boston, left that city recently with a party of aviators, mechanics, foresters and photographers and will conduct an exploration by aeroplane of the timber resources of Labrador. Boston lumbermen are reported to have assisted in financing the expedition with a view to the possible development of new sources of supply of pulpwood and lumber.

Andrew P. Shand passed away recently at Windsor, N.S. For many years Mr. Shand has been closely associated with the business life of Windsor. He was closely connected with the Windsor Furniture Co.; the Windsor Lumber Co.; the Hants County Mfg. Co., Falmouth, N.S., barrel manufacturers; in addition he was a Governor of the Acadia College and President of the Commercial Bank of Windsor.

M. E. Casey, eastern representative of the P. B. Yates Machine Co., Limited, Hamilton, Ont., and Beloit, Wis., died recently in Montreal. Mr. Casey was a native of Dundas, Ont., but had resided in Montreal for the last twenty years, being connected with Williams & Wilson, Limited, and the P. B. Yates Co., Limited, having been sales manager of the latter concern for the Montreal district for the last ten years. A few months ago he went into business on his own account, representing the P. B. Yates Co., Limited, in eastern Canada, Quebec, Maritime Provinces and Newfoundland. Interment took place in Dundas.

Albert E. Dymont, who was recently elected vice-president and chairman of the board of directors of the Canadian General Electric Company, to fill the vacancy caused by the death of W. D. Matthews, is senior partner of the firm of Dymont, Cassels & Company, stock-brokers, Toronto, and is identified with a number of progressive organizations. Mr. Dymont, who was born in Wentworth county, is a son of the late Nathaniel Dymont, and learned the lumber business with his father's concern, Mickle, Dymont & Son, who have several mills throughout Ontario, and also operate large industries in Toronto, Brantford and other cities. Albert E. Dymont holds a large interest in the organization.



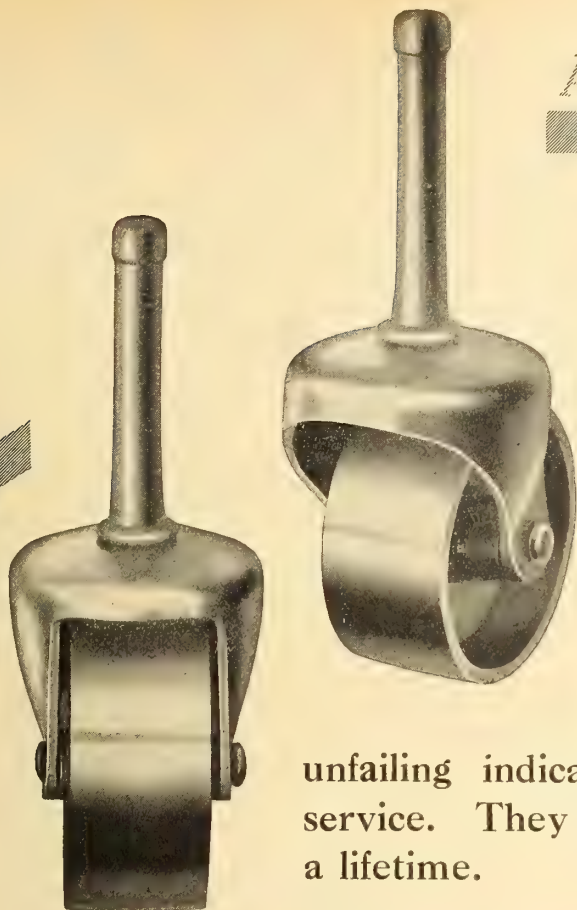
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From our complete line of guaranteed saws we can meet your needs for special shaped tooth grooving saws in round face, bevel face, shear cut, straight face, etc. Write for catalog and further information regarding our other manufactures, including Dado Heads, Mitre Saws, Novelty Saws, Rip and Cross-Cut Circular Saws, Concave Saws, Band Saws, Hand Saws, Cross-Cut Saws, etc.

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Sizes three, four, five, six and seven.

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Berlin Double Surfer, No. 177.
 Berlin No. 88 Hardwood Matcher.
 Berlin No. 90 High Speed Matcher.
 Berlin No. 401 42-in. Drum Sander.
 Mershon 44 in. Band Rip Saw.
 Box 61, Canadian Woodworker. 6-7

FOR SALE

A few carloads of Spruce Crating $\frac{5}{8}$ " and 1" x 2", 3" and 4" wide, in random lengths.

Stadacona Box Company,
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WANTED

Two Cut-off Saw men, also one man capable of taking charge of Furniture Department in Woodworking plant.

J. R. Eaton & Sons, Limited,
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FOR SALE

Two storey Brick Factory Building with or without power and machinery; also Dry Kiln and store house, located on large lot convenient to two railways. Particulars on application. Address Box 949, Owen Sound, Ont. t.f.

Real Bargains

For quick disposal, as we need the space, and must be moved quickly.

- 1—36" Bandsaw.
- 1—Swing Cut-off Saw.
- 1—Double Spindle Shaper.
- 1—12" Jointer.
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- 2—Swing Cut-off Saws.
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- 1—Little Giant Planer and Matcher.
- 1—Matheson Automatic Lathe for turning irregular shapes.
- 1—Cowan Heavy Type Power Feed Rip Saw.

This is the opportunity for someone.

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- 1 Yates No. 421 Six Drum Sander.
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- 1 Jackson-Cochrane Resaw.
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About 150 M. ft. Crating Spruce, $\frac{5}{8}$ ", 1", 2", 3" and 4"—in random lengths.
 Also Red Oak, Maple and Elm, 1" to 3".

Apply:

J. P. Abel, Fortin & Co.,
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Wanted At Once

Fully qualified superintendent to take charge of woodworking factory manufacturing dowels, broom handles and small parts. References required, stating experience. Great opportunity for energetic, capable manager. Profit sharing. Apply Box 62, Canadian Woodworker. 7

Wanted Salesman

Man competent to visit Lumber Mills and Woodworking Plants generally, with some knowledge of Saw Mill operations. Must have fairly good education, native Canadian, returned soldier preferred. In writing give full particulars, experience and references.

Apply Box 63, Canadian Woodworker. 7

Woodworking Conditions from Coast to Coast

The sash, door and planing mill group are busy at Sydney, effected by strike at Halifax, and showing improvement in Charlottetown. St. John reports good business for the planing mills and, in addition, state that the box, brush and broom factories busy. In Fredericton and Moncton the sash and planing mills were running full time. All the different woodworking branches in Quebec are fairly busy with the exception of the piano makers in the Montreal district, who report trade to be quiet. The trade in Ontario is enjoying great activity. There is a marked shortage of skilled help and the demand from some sections is very insistent. The furniture factories, especially, are working to capacity and a number of new plants are being put in operation. With the exception of the Winnipeg district there is a good demand for wood products throughout the middle west. Vancouver, New Westminster and Victoria all report that business is very satisfactory in the various door, sash and box factories.

FOR SALE

Battery of "Bowser" Tanks for Finish Room. Good Condition.

t.f. Box 32, Canadian Woodworker

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- 20" Sidney, "Famous."
- 16" Cowan.
- 14" Sidney, "Famous."
- 14" Sidney, "Famous."

Wood Planers

- 30" Whitney pattern surfacer.
- 26" double surfacer.
- 24" Champion planers and matchers, moulding attachment (2).
- 24" Galt, planer and matcher.
- 24" Hermance, double surfacer.
- 24" MacGregor-Gourlay.
- 24" Sidney, "Famous," single surfacer.
- 24" Crescent, single surfacer.
- 18" Sidney, Famous.
- 12" buzz, with slotted head (2).
- 12" Petrie special, buzz (6).

Band Saws

- 60" Fay & Egan, band re-saw.
- 36" West Side, pedestal.
- 30" Cowan, bracket.

Saw Tables

- No. 2 Famous, variety.
- No. 2 Crescent, boring attachment.
- Galt, iron frame, cut off.
- MacGregor Gourlay railway cut-off.
- Greenlee automatic cross-cut.
- 7½" Fay & Egan, swing saw.
- 7" Williams, swing saw.
- Canadian, steel frame, pole saw.
- Vaughan, portable, drag saw.
- Champion, portable drag saw.

Mortisers

- Cowan, upright, power.
- Galt upright, compound table.
- No. 5 New Britain, chain.
- No. 1 Smart, foot power.
- No. 2 Osborne, foot power.

Moulders

- 13" Clark-Demill four-side.
- 12" Cowan four side.
- 12" Woods four-side, inside.
- 10" Houston four side.
- 8" Dundas four-side.
- 6" Dundas sash stickler.

Clothespin Machinery

- Humphrey automatic lathes (5)
- Humphrey double slotters (3)

Miscellaneous

- No. 30 Famous, universal woodworker.
- Fay, horizontal, boring machine.
- Nos. 7 and 8 Sidney, post boring machines.
- No. 920 C. M. C., post boring machine.
- No. 2 Defiance, belt sander.
- Fay & Egan 12 spindle dovetailer.
- MacGregor Gourlay 12 spindle dovetailer.
- No. 120 Cowan, panel raiser.
- 20" American, wood scraper.
- Dundas, wood frame tenon machine.
- No. 2 Reynolds, power screw driver.
- Hall's automatic shingle machine.
- Waterous lath machine.
- 26" Dominion lath trimmer.
- 6" Linderman, automatic, glue jointer.
- No. 3 Defiance, rim & felloe rounder.
- No. 1 Defiance, axle shaper.
- No. 1 Defiance, spoke driver.

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Everywhere. Will produce a wood joint or panel of higher adhesiveness and resistance than animal and vegetable glue. Equally good for jointing together steel, brass, stone, glass, linoleum, cork, cloth, etc., to wood and leather.

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Easy to prepare. Simply add cold water to powder, mix and let stand for 15 minutes. That is all. It is then ready for use. Batch of veneer glue good for 5 hours, the same of joint glue good for a day's work, without the slightest deterioration. Easily applied with brush or spreader. Agreeable to use. Saves heat and dry kilns.

Certus stood foremost in fulfilling the exacting needs of war production. This fact should commend it to manufacturers who are going to build during times of peace on the basis of merit and quality. Certus is an absolute necessity for manufacturers who contemplate seeking foreign markets. Certus-built products will resist indefinitely the most humid climates.

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Be Sure You Know What is Your Actual Glue Cost

The test is not first cost per pound of dry glue but what is your spread per thousand square feet of three or five ply stock, and what is your glue strength?

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For Veneer and Veneer Drying

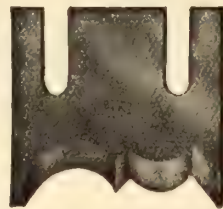
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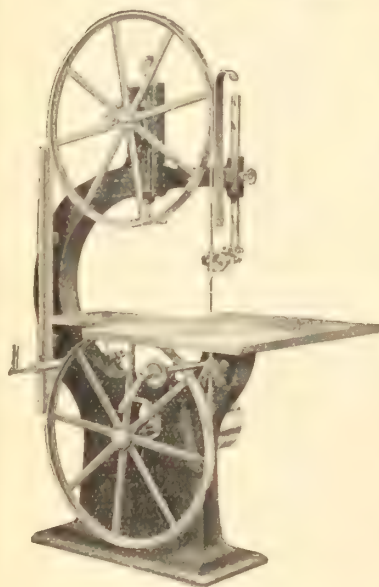
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PLANER KNIVES

and **CUTTERS**

OF ALL DESCRIPTION

The Peter Hay Knife Co., Limited
GALT, ONTARIO

Silver's Improved Power Band Saws

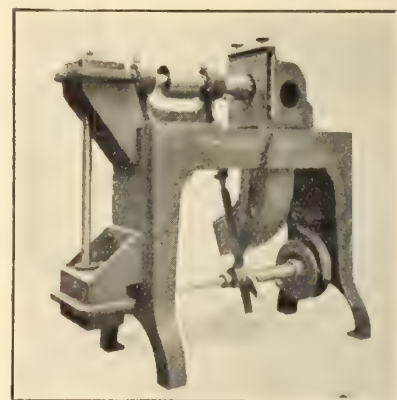


Equipped with Wright's Patent Non Friction Roller Saw Guide and new patent tilting mechanism the Silver Improved Power Band Saws are exceedingly simple in operation and mechanism yet wonderfully efficient in their work. You will appreciate their many points of supremacy. Write us for descriptive matter, etc., regarding these machines.

The Silver Mfg. Co.

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AUTOMATIC MACHINE FOR CUTTING HOLES



Patents Pending

This machine will cut holes or half holes in long or short boards, smooth and true in size. Will also cut wheels and automatically bore holes in the center at same operation. It works automatically on short blocks, feeding up to the head and pushing them out after they are cut. Has a capacity of 18 wheels or holes per minute. Will make bevel or square edge wheels. When writing give diameter, thickness and kind of wood to be used. Machines are made to suit the work. It has an attachment to cut hand-holds in crate ends, or a Special Machine is made for that purpose. When writing give street number.

Machine is substantially built of iron and steel, ball bearing equipped and worm gears running in grease.

Full detailed description and price on request.

The Virginia Hole Sawing Co.

S. S. See, Manager 14 Third St., N.E., Roanoke, Va.

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The following books are offered at special prices subject to previous sale:

Saw Fitting Manual, a treatise on the care of saws and knives Deals with everything in the saw and knife alphabet, from adjustments to widths. 144 pages. Price \$2.00.

Common-Sense Handrailing, by Fred T. Hodgson. Published by Frederick J. Drake & Company, Chicago. 114 pages, illustrated. Price 50c.

"Boy Activity Projects," by Samuel A. Blackburn, published by the Manual Arts Press, Peoria, Ill. 144 pages, including 64 illustration plates. Price \$1.25.

Handrailing Simplified, by An Experienced Architect. Published by William T. Comstock, New York. 52 pages, illustrated. Price 50c.

"Carpentry," by Ira S. Griffith. Published in 1916 by The Manual Arts Press. 188 pages, illustrated. Price \$1.00.

Cabinet Making, by J. H. Rudd. Published by Grand Rapids Furniture Record Company. 210 pages, illustrated. Price \$1.50.

How to Join Mouldings; or, The Arts of Mitering and Coping, by Owen B. Maginnis. Published by William T. Comstock, New York. 72 pages, illustrated. Price 50c.

The Preservation of Structural Timber, by Howard F. Weiss. Published in 1915 by McGraw-Hill Book Co., 312 pages, illustrated. Price \$3.00.

Utilization of Wood-Waste (Second Revised Edition), by Ernst Hubbard. Published in 1915 by Scott, Greenwood & Sons, 192 pages, illustrated. Price \$1.50.

Seasoning of Wood; A Treatise of the Natural and Artificial Processes Employed in the Preparation of Lumber for Manufacture, with Detailed Explanations of its Uses, Characteristics and Properties, by Joseph Wagner. Published by D. Van Nostrand Co., in 1917. 274 pages, illustrated. Price \$3.00.

"The Kiln Drying of Lumber," a practical and Theoretical Treatise, by Harry Donald Tiemann, M.E., M.F. Just published, by I. B. Lippincott Co. 316 pages, illustrated. Price \$4.00.

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Read below what one large furniture manufacturer said about our screws to one of his competitors.



See That
Square Hole?

See That
Square Hole?



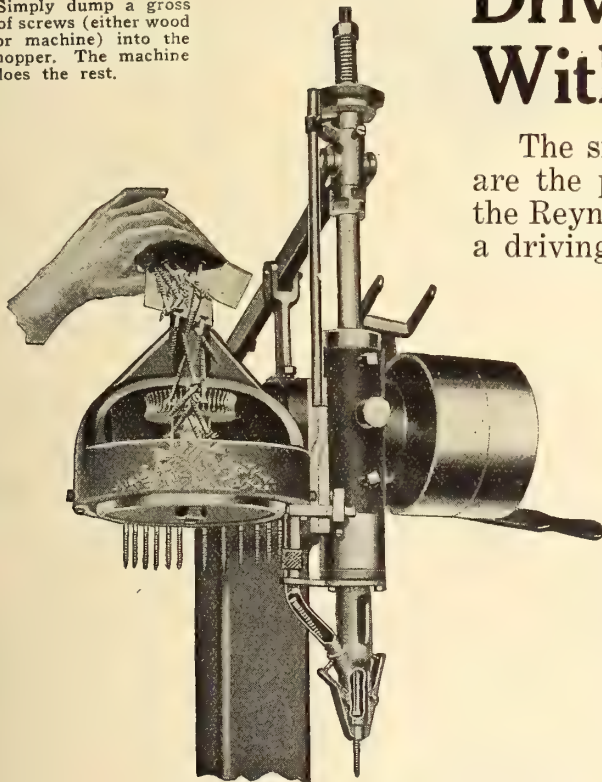
Robertson Patented Socket Head Wood Screws

We are in receipt of your letter of the 17th in reference to the Robertson screw. We were rather backward in trying to make ourselves believe that this screw is as good as the old slot screw, but we have entirely changed and are now using the socket head screw exclusively. It would surprise you how many more screws of this make the workman can drive than of the old style. You will make no mistake in using their screws altogether.

WE MAKE AND SUPPLY FREE WITH FIRST ORDER BITS FOR
USE IN REYNOLDS MACHINE OR ANY OTHER TYPE DRIVER.

P. L. Robertson Mfg. Co., Ltd.
Milton - - - - - Ontario

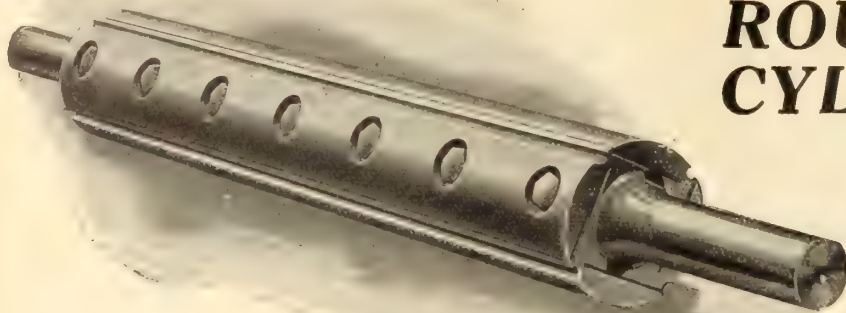
Simply dump a gross of screws (either wood or machine) into the hopper. The machine does the rest.



Drive Screws Efficiently With Simplicity

The simplicity of operation and the results obtained are the points that have established the reputation of the Reynolds' Automatic Screw Driving Machines. With a driving speed of from 800 to 1,600 screws per hour, each screw driven accurately and securely, they will save you dollars in time and labor. Their operation is surprisingly simple—your new hand can get perfect results in an exceedingly short time. Let us send you further information—use the coupon to-day.

Tear off and mail to the
REYNOLDS MACHINE COMPANY,
Department "C," Massillon, Ohio, U.S.A.
Please send us further information regarding the
Reynolds Automatic Screw Driving Machine.
Name
Address



We are also dealers in new and rebuilt Woodworking Machinery.

PATENTED
**ROUND SAFETY
CYLINDER HEAD**

Two and four-knife heads for jointers. Round heads for moulders, top, bottom and side heads. Six-knife heads for flooring and surfacing machines. Write for particulars.

Tawney Machine Co.
WILLIAMSPORT, PA.

The Largest Table Company
In The World

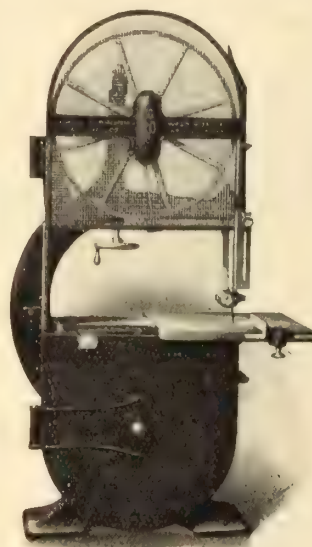
The Imperial Furniture Co.
Grand Rapids

are replacing their Dry Kilns
by a battery of up-to-date

GRAND RAPIDS VAPOR KILNS

Grand Rapids Veneer Works
Grand Rapids, Mich. Seattle, Wash.

For Better Built Bands



If you're interested in high-quality, big-quantity and the lowest possible operating cost you should investigate the H & B Band Saw machines.

New Model No. 120—
36-inch Wheel

New Model No. 144—
30-inch Wheel

the latest and best development in bands—machines of the H & B quality in design, material and workmanship — the best possible guarantee of satisfaction.

Arranged for either belt or direct connected motor drive. Tilting lever adjustment at top wheel, table tilts 45 degrees forward and 5 degrees back, guides both above and below table, guide bar stands at point set and all other modern features.

Furnished with or without hinged guards for upper and lower wheels. Illustrated circular and full information on request.

Hall & Brown Wood Working Machine Co.
Home Office and Factory, 1913 to 1933 N. Broadway
SAINT LOUIS, U.S.A.

We have the best facilities for the
Manufacture of

SPRING MATTRESS and CAMP COT FRAMES

also DIMENSION STOCK
in Maple, Beech and Birch

Write for prices

John P. Newman Sons'
WIARTON, ONT.

Wire, Wire Bale Ties and Wire Products

Bale ties, Heading ties, Lath ties, Hardwood Flooring ties, Wire Nails, Flat Steel or Wire Barrel hoops. All sizes of Fine Wire in Bright, Tinned or Galvanized, manufactured to order.

Laidlaw Bale-Tie Co., Ltd.

A. T. Diggins, Toronto, Ont. H. E. O. Bull, Montreal, Que.
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Head Office and Works: **HAMILTON, CANADA**

A Few New and Refitted Woodworking Machines

from our large stock of up-to-date machinery. Write us for prices and information on any machines not listed that you may require.

CHAIN MORTISERS

Stock No. 44911—Used M-256 Cowan Chain Mortiser with 5/16 in. bar chain and sprocket. No sharpener.
 Stock No. 44566—Practically new M-255 Cowan Chain Mortiser with 5/16 in. chain, bar and sprocket with 1 3/8 in. sprocket extra.
 Stock No. 44568—Practically new M-255 Cowan Chain Mortiser with 3/8 in. chain bar and sprocket and 5/16 in. chain bar and sprocket.
 Stock No. 44567—Practically new M-255 Cowan Chain Mortiser with 3/8 in. chain bar and sprocket and 5/16 in. chain bar and sprocket.

SINGLE SURFACE PLANERS

Stock No. 32959—New 24 x 7 Eclipse Single Surface Planer, top and bottom rolls driven. Feed rolls are 3 1/2 in. diameter, 13 1/2 in. apart.
 Stock No. 31317—New Preston 26 x 10 Single Surface Planer with divided rolls. Feed rolls are 16 in. apart.
 Stock No. 31318—As above.
 Stock No. 44620—Used 24 x 7 Eclipse Planer, Matcher and Moulder, will match 12 in. wide.
 Stock No.—Used 24 x 7 Eclipse Single Surface Planer.
 Stock No. 33111—New 24 x 7 Clark & Demill Single Surface Planer, cylinder driven at both ends. Feed rolls 4 1/2 in. dia., 19 in. apart, all driven.
 Stock No. 29278—Used 30 x 8 McGregor-

Gourlay Single Surface Planer, with divided rolls and chip breaker. Cylinder is driven at both ends. Feed rolls 6 in. dia., 17 in. apart. This is a good heavy type cabinet planer.

Stock No. 31758—Used 24 x 6 Whitney Single Surface Planer, cylinder driven at both ends. Feed rolls 4 3/8 in. dia., 12 1/2 in. apart, all driven.

Stock No. 44913—Used 28 x 6 Whitney type Single Surface Planer, cylinder driven at both ends. Rolls 4 3/4 in. dia., 13 in. apart, all driven.

Stock No. 44846—Second-hand McGregor-Gourlay 24 x 7 Pony Planer, top rolls only are driven. Rolls are 3 in. dia., 13 in. apart. Machine is now manufactured by the C. M. C. Bottom rolls 5 in. dia., and machine will feed 25 ft. per minute. Tight and loose pulleys are 8 1/2 in. x 4 1/2 in., run 1000 r.p.m.

CUT OFF SAWS

Stock No. 42306—Used Greenlee Automatic Cut-Off Saw, travelling saw carriage operated by foot lever and friction, 36 in. dia. saw, cuts 13 1/2 in. above table.

Stock No. 44798—Used McGregor-Gourlay Dimension Rip and Cross Cut Saw Table. Will carry 18 in. saws, ripping 13 in. wide, with rip and cross cut fences, raising and lowering arbor, tilting table 48 in. x 36 in.

Stock No. 42782—New Beach Iron Frame Rip Saw with wooden table, raising and lowering mandrel.

Stock No. 42795-41—New No. 125 Preston Variety Tilting Saw Table.

Stock No. 44733—New No. 127 Preston Variety Tilting Saw Table.

Stock No. 42826—New No. 4 Dodds Variety Tilting Saw Table.

Stock No. 42784—New No. 6 Dodds Variety Tilting Saw Table.

Stock No. 44685—American Lightning Cut-off Saw. Machine is self contained. Size of table 26 x 31 1/2 in.

SASH AND DOOR RELISHERS

Stock No. 44529—M-225 Cowan Sash & Door Relisher and Mortiser.

Stock No. 40964—Jackson Cochrane Door Relisher.

Stock No. 40968—M-234 Cowan Sash Relisher and Mortiser.

BAND SAWS

Stock No. 44627—Used Genuine Westside 36 in. Band Saw, with tilting table, good up-to-date machine; first class condition.

Stock No. 45590—New 36 in. Preston Band Saw with wire guard on top wheel, iron enclosing doors on bottom wheel.

Stock No. 44653—Used 36 in. Preston Band Saw with wire guard on top wheel and iron enclosing doors on bottom wheel arranged for motor drive.

Stock No. 44913—Used 36 in. Defiance Band Saw with re-sawing attachment, will carry 1 1/2 in. saw.

The A. R. Williams Machinery Co., Limited
 TORONTO, CANADA

SIMONDS SAWS

If you want a good saw—one that will produce finished goods rapidly and at the lowest cost, get the **Simonds**. It is standard of Quality and Efficiency.

Our Circular and Band Saws are tempered right, hold their tension and do not crack. Thousands are in use in large woodworking shops, box factories and mills all over the world. Get our prices on Saws, Planer Knives and Moulder Knives.



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Woodworkers and Lumbermen

The Sheldon Exhaust Fans have characteristics that adapt themselves to the service of the Planing Mill or Wood-working

Plant. They are specially designed for this kind of work, having a saving in power and speed of 25% to 40%.

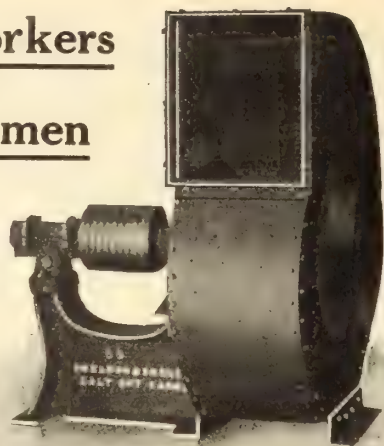
Write for Industrial Booklet.

SHELDONS LIMITED - Galt, Ont.

Toronto Office, 609 Kent Building

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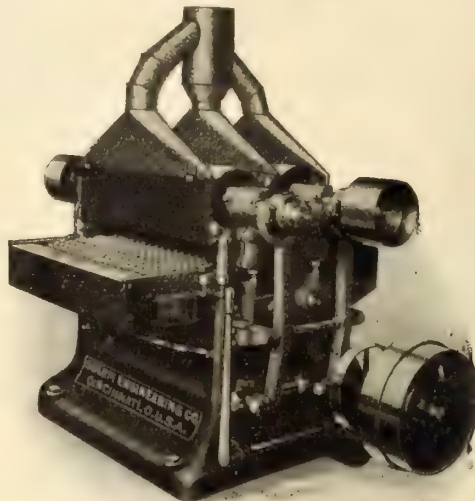
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\$1200⁰⁰ to \$1500⁰⁰ Saving on Every Drum Sander

Simplicity of construction allows us to offer a 37" Endless Bed Drum Sander at far below the cost of the old type of machine.

It does more work and saves \$10.00 to \$20.00 in upkeep. Whether you need a sander now or not write for our bulletin and get posted on this economical machine.



One cost saving part used on this machine can be bought separately and attached to any standard make of drum sander.

Solem Engineering Co.

SHEBOYGAN, WIS., U. S. A.

KANE VEGETABLE VENEER GLUE

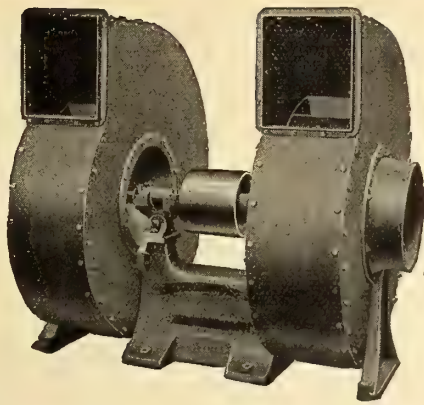
Quality—None Better

We guarantee that the process used in the manufacture of Kane Vegetable Veneer Glue, and also the dissolving with **water and caustic soda** in the usage of same by the consumer, do not infringe any patents, and particularly the patents recently construed by the Court of Appeals of the Seventh Circuit, or the Decree of the U. S. District Court at Chicago, signed August 5, 1918.

Manufactured and sold exclusively by

KANE MANUFACTURING COMPANY

28 E. Jackson Blvd., CHICAGO



CANADIAN

Slow Speed Fans are designed and built right.

They will save from 15 to 25 per cent. on your power costs.

Write for a catalog

**Canadian Blower & Forge
Company, Limited**

KITCHENER - ONTARIO

General Motors Company
Ford Motor Company
Steinway & Sons
The Brunswick-Balke-Collender Company
National Casket Company

These—and hundreds of other leading manufacturers—have recently selected

National Compartment Kilns



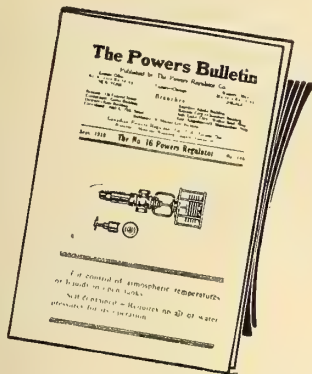
Such endorsement is eloquent.
These people want only the best.
They get it

In NATIONAL Kilns.

THE NATIONAL DRY KILN CO.

1117 East Maryland St., INDIANAPOLIS, Indiana

Save the Steam You're Wasting



The Powers Bulletins contain pertinent facts regarding Automatic Heat Control, and give concise, accurate information about Powers Regulators.

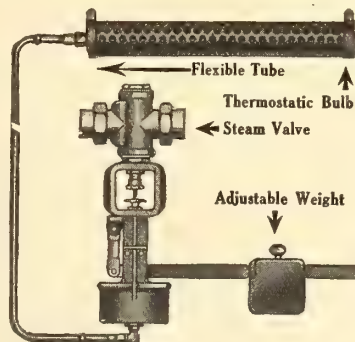
Tell us where you think Automatic Control might save, and we will be glad to send you appropriate Bulletins and definite advice.

Automatic Heat Control is economical and always accurate. It prevents wrong conditions which manual control can only correct. It insures better results at lower costs, in the dry kiln, glue kettle, dry room, in fact, wherever temperature—liquid or air—must be maintained at a certain point.

All Powers Regulators are noted for their reliability, long life, and low cost of maintenance.

The No. 15 Regulator has been attached to over 1,000 Dry Kilns in the last year, and besides reducing costs 25% and more it has also increased output to a very large extent.

Ask for Bulletin 142.



Powers Regulator No. 15

Ask us about any process where you think automatic heat control would be an advantage. Temperature regulation has been our sole business for over thirty years, and we have gained much practical experience which we shall be glad to apply for your benefit, and show you a way to save coal, labor, time, and material.

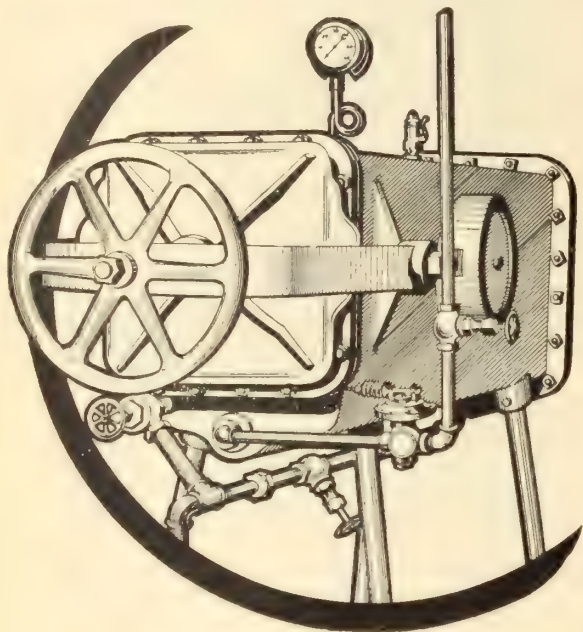
THE CANADIAN POWERS REGULATOR CO., LTD.

Specialists in Automatic Heat Control

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TORONTO, ONT.

Wood Steaming Retort



Wood Bending Manufacturers:

This is one of our

Perfection Retorts

which we guarantee will save you

50% Less Breakage

in your bending department than your present process; that your stock will dry in your forms or presses in one-third less time; that you will have no stained stock; that your stock will retain its shape much better after being bent; that it will dry in your dry-kiln in one-half less time and that your steam consumption will be reduced at least 90 per cent.

The door can be opened and closed in ten seconds, and it is steam and water tight and for this reason can be placed anywhere in your factory.

Compare this IMPROVED RETORT with your present steam boxes, then write us for our Booklet on Progressive Wood Steaming.

Made in Preston, Ontario

**Perfection Wood Steaming
Retort Co.**

PARKERSBURG - WEST VIRGINIA

Insure Perfect Results With the

**INTERNATIONAL
ELECTRIC
GLUE HEATER**

Your glue will always be in perfect condition if you use the International Electric Glue Heaters. They will prove exceedingly efficient and reliable. Operating from any lighting circuit thereby eliminating all special arrangement and the risk from fire is nil. Their cleanliness will also please you, no mussy pots or drippings. Their quickness of operation will save you time and money. Write us today for prices and further information.

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MANUFACTURERS
ELECTRICAL HEATING APPLIANCES

INDIANAPOLIS, U.S.A.

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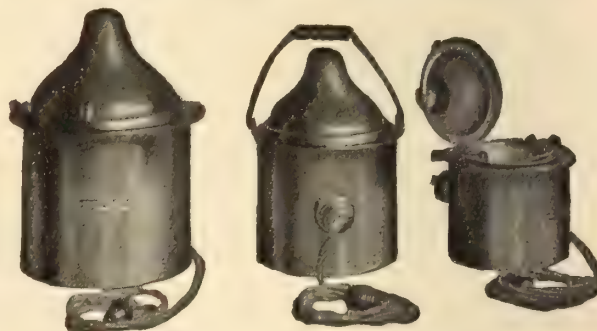
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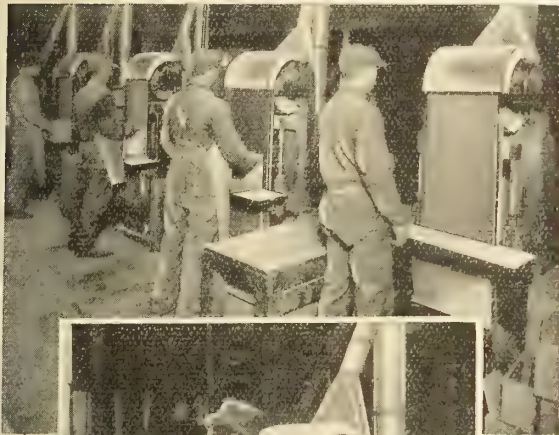
VANCOUVER
402 Vancouver Block



4 Quart

2 Quart

1 Quart



Helping Willard to Produce

IN the big plant of The Willard Storage Battery Company at Cleveland the sanding of the battery boxes is one of the mighty important little details of the making of Willard Storage Batteries.

Carborundum Brand Garnet Belts are used exclusively

The boxes are of oak or walnut. The sanding conditions are severe because of the glued and nailed joints. But at that an operator is able to sand seventeen hundred boxes on six sides in a working day, using but three belts.

Every box is turned out smoothly and uniformly finished. Willard uses Carborundum Brand Garnet Belts because they stand up to the work, cutting free and fast. Because they keep up production.

Every belt is accurately made with smooth, flexible joints. They are coated with clean, sharp, free-cutting garnet grains.

They are doing Willard's work as it should be done. We can make belts to do your work with equal efficiency.

**Carborundum Brand Garnet Products
Make Good Sanders Better Sanders**

THE CARBORUNDUM COMPANY, NIAGARA FALLS, N. Y.

GRAND RAPIDS CINCINNATI PHILADELPHIA BOSTON CHICAGO CLEVELAND
NEW YORK PITTSBURGH MILWAUKEE

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1 in., 1 1/4 in., and 1 1/2 in. Dry Basswood

Dry Birch Stock

We offer in **Birch and Maple**
End Stock 1 x 7 in., and wider, 1 x 6 in.

All thicknesses and grades in
MAPLE, BIRCH, ELM, BASSWOOD
and **BROWN ASH**

Spruce, Hemlock and Pine

Can saw to order at MacDonald's Siding
Widdifield and Powassan

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TORONTO

TORONTO, CANADA

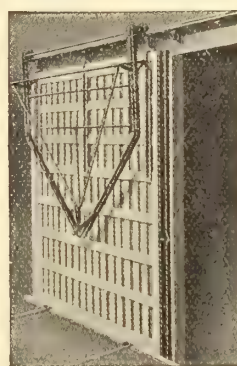
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The Elgie & Jarvis Lumber Co., Ltd.

DRY BIRCH AND OAK

2 cars 1" No. 1 Com. and Btr. Birch.
2 cars 2" No. 1 Com. and Btr. Birch.
1 car 1 1/2" No. 1 Com. and Btr. Oak.
1 car 2" No. 1 Com. and Btr. Oak.
75,000 ft. 1" Pine Crating (Sound).
75,000 ft. 1 1/2" and 5/8" Pine Crating (Sound).

The Door Carrier System



Makes your dry-kiln doors steam-tight and saves time, heat, trouble and money.

Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbeted joint, where it is held steam-tight by its own weight. Applicable to old or new kilns.

Ask for catalogue.

DRY KILN DOOR CARRIER CO.

1117 Cornell Ave.
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"Easimoov"

Patented

FOR OUTSIDE WORK OR FOR SPECIALLY CURVED WORK

A new tape which was quickly recognized by veneer users as supplying a real demand.

Holds Veneer Perfectly, yet can be removed instantly after having served its purpose, without being sanded.

Saves Time, Labor and Expense

The kind of tape that pleases the operator.

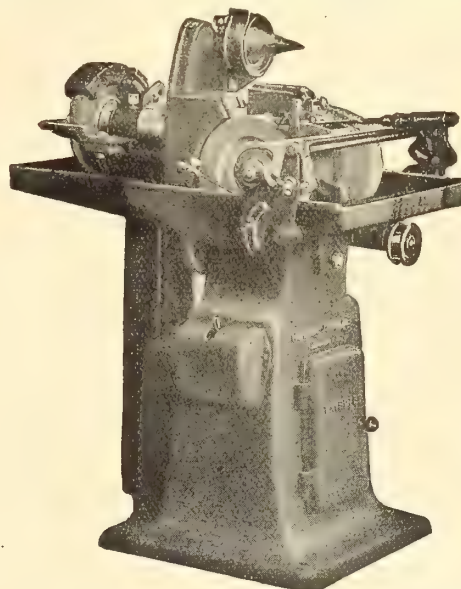
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Veneer Tape Specialists

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THE MODERN EDGE TOOL SHARPENING MACHINE
THE STANDARD FOR ALL WOOD-WORKING SHOPS



No. 481 MOTOR OR COUNTERSHAFT DRIVE

An automatic attachment for grinding long knives can be furnished with this machine.

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3. Grinding Cone. 4. Leather Wheel. 5. Emery Wheel.

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220 S Philadelphia St.

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HANOVER, PA.

"Canadian Woodworker" Buyers' Directory—Continued

GLUE SPREADERS

Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GLUE ROOM EQUIPMENT

Perrin & Company, W. R., Toronto, Ont.

GLUING MACHINES

Francis & Co., Chas. E., Rushville, Ind.

GRINDERS (Cutter)

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

GRINDERS (Knife)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GRINDING WHEELS

Carborundum Co., Niagara Falls, N.Y.

GROOVING HEADS

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.

GUM LUMBER

Aberdeen Lumber Co., Pittsburg, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
Anderson-Tully Co., Memphis, Tenn.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bellgrade Lumber Co., Memphis, Tenn.
Brown & Co., George C., Memphis, Tenn.
Churchill-Milton Lumber Co., Louisville, Ky.
Cornelius Lumber Co., St. Louis, Mo.
Gum Lumber Association, Memphis, Tenn.
Heyser Lumber Co., W. E., Cincinnati, Ohio.
Holly Ridge Lumber Co., Louisville, Ky.
Nickey Bros., Memphis, Tenn.
Paepcke-Leicht Lumber Co., Chicago, Ill.
Probst Lumber Co., Cincinnati, Ohio.
Thomas & Proetz Lumber Co., St. Louis, Mo.
Wisconsin Lumber Co., Chicago, Ill.

HAND SCREWS

Fay & Egan Co., J. A., Cincinnati, Ohio.

HANDLE & SPOKE MACHINERY

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Whitney & Son, Baxter D., Winchendon, Mass.

HARDWARE

Laidlaw Bale-Tie Co., Hamilton, Ont.
Weber, Knapp Co., Jamestown, N.Y.

HARDWOOD LUMBER

Aberdeen Lumber Co., Pittsburgh, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
American Oak Mfrs. Assn., Memphis, Tenn.
American Walnut Association, Washington D.C.
Anderson-Tully Co., Memphis, Tenn.
Atlantic Lumber Company, Toronto, Ont.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bellgrade Lumber Co., Memphis, Tenn.
Bonner & Sons, J. H., Memphis, Tenn.
Brown & Company, Geo. C., Memphis, Tenn.
Burns & Knapp Lumber Co., Conneautville, Pa.
Bury & Company, Robert, Toronto, Ont.
Cornelius Lumber Co., St. Louis, Mo.
Canadian General Lumber Co., Toronto, Ont.
Churchill-Milton Lumber Co., Louisville, Ky.
Clark & Sons, Edward, Toronto.
Darby Hardwood Lumber Co., Memphis, Tenn.
Des Moines Sawmill Co., Des Moines, Iowa.
Dooley Lumber Co., F. T., Memphis, Tenn.
Elgie & Jarvis Lumber Co., Toronto, Ont.
Evansville Band Mill Co., Evansville, Ind.
Gayoso Lumber Co., Memphis, Tenn.
Hart & McDonagh, Toronto, Ont.
Heyser Lumber Co., W. E., Cincinnati, Ohio.
Holly Ridge Lumber Co., Louisville, Ky.
Hunt, Wellington & Smith, Nashville, Tenn.
Kersley, Geo., Montreal, Que.
Korn-Conkling Co., Cincinnati, Ohio.
Lawrence & Co., P. J., St. Louis, Mo.
Long-Knight Mfg. Co., Indianapolis, Ind.
Maley & Wertz, Evansville, Ind.
McLennan Lumber Co., Montreal, Que.
Memphis Band Mill Co., Memphis, Tenn.
Mowbray & Robinson, Cincinnati, Ohio.

Paepcke Leicht Lumber Co., Chicago, Ill.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City.
Percy E. Heeney, Kitchener, Ont.
Pickrel Walnut Co., St. Louis, Mo.
Probst Lumber Co., Cincinnati, Ohio.
Shafer Hardwood Co., John I., South Bend, Ind.
Spencer, C. A., Montreal, Que.
Stark & Co., Jas. E., Memphis, Tenn.
Stimpson & Co., J. V., Owensboro, N. Y.
Wisconsin Lumber Co., Chicago, Ill.

HYDRAULIC VENEER PRESSES

Perrin & Company, Wm. R., Toronto, Ont.

JOINTERS

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

LATHES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.

MACHINE KNIVES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

METALINE NAILS

Dominion Tack & Nail Co., Galt, Ont.

MITRE SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

MOULDERS

Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Vonnegut Machinery Co., Indianapolis, Ind.

MULTIPLE BORING MACHINES

Root Company, B. M., York, Pa.

MULTIPLE BOXING MACHINES

Fay & Egan Co., J. A., Cincinnati, Ohio.
Nash, J. M., Milwaukee, Wis.

OIL STONE GRINDERS

Mummert-Dixon Co., Hanover, Pa.

PANELS

Hay & Co., Limited, Woodstock, Ont.
Waetjen & Co., George L., Milwaukee, Wis.

PATTERN SHOP MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PERIOD TURNINGS

Walter & Sons, J., Kitchener, Ont.

PLANERS

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLANING MILL MACHINERY

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PORTABLE DRILLS

Wisconsin Electric Co., Wisconsin, U.S.A.

PRESSES (Veneer)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Co., Wm. R., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

PULLEYS

Bernard Industrial Co., A., Fortierville, Que.

RESAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RIM AND FELLOE MACHINERY

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.

RIP SAWING MACHINES

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RUBBING MACHINES

DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.
Paasche Air Brush Co., Chicago, Ill.

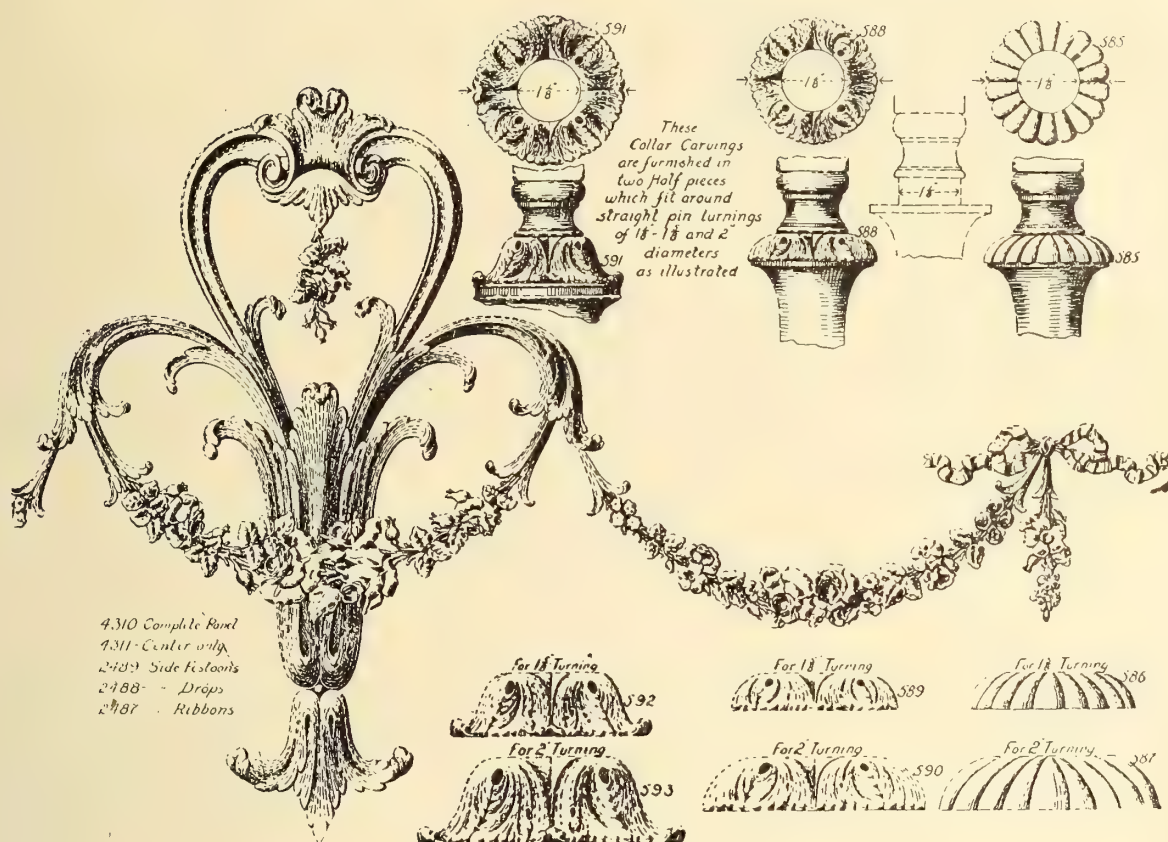
SAFETY DEVICES

Cowan & Company, Galt, Ont.

SANDERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Solem Engineering Co., Sheboygan, Wis.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

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KITCHENER

ONT.

"Canadian Woodworker" Buyers' Directory—Continued

SASH, DOOR & BLIND MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAWS

Atkins & Co., E. C., Indianapolis, Ind.
Radcliff Saw Mfg. Company, Toronto, Ont.
Shurly-Dietrich, Ltd., Galt, Ont.
Simonds Canada Saw Co., Montreal, Que.

SAW SWAGES

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.

SAW TABLES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SCRAPING MACHINES

Canada Machinery Corporation, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.

SCREW DRIVING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Reynolds Machine Co., Massillon, Ohio.

SCROLL SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SECOND-HAND MACHINERY

Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

SHAPERS

American Woodworking Machinery Company, Rochester, N.Y.
Cowan & Company, Galt, Ont.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS

Canadian Blower & Forge Co., Kitchener, Ont.
Sheldons Limited, Galt, Ont.
Toronto Blower Company, Toronto, Ont.

SHOOK BUNDLER

Neilson & Company, J. L., Winnipeg, Man.

SPRING MATTRESS FRAMES

Newman Sons, J. P., Warton, Ont.

SPRINGS FOR UPHOLSTERY

Weber, Knapp Co., Jamestown, N.Y.

STAINS

Ault & Wiborg, Toronto, Ont.
Du Pont Fabrikoid Co., Toronto.
Marietta Paint & Color Co., Marietta, Ohio.

SINGLE SPINDLE BOXING MACHINES

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.

STAVE SAWING MACHINE

Whitney & Son, Baxter D., Winchendon, Mass.

SURFACERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES

Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES

Walter & Company, B., Wabash, Ind.

TACKS AND NAILS

Canada Tack & Nail Co., Hamilton, Ont.
Dominion Tack & Nail Co., Galt, Ont.

TEMPERATURE REGULATORS

Canadian Powers Regulator Co., Toronto, Ont.

TENONING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TIME CLOCKS

International Business Machines Co., Toronto, Ont.

TRIMMERS

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRUCKS

Sheldons Limited, Galt, Ont.
National Dry Kiln Co., Indianapolis, Ind.

UPHOLSTERER'S FLOCK AND BATTING

Bauers Limited, Waterloo, Ont.

VARNISHES

Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg Company, Toronto, Ont.
Du Pont Fabrikoid Co., Toronto.
Jamestown Wood Finishing Co., Jamestown, N.Y.
Penfound Varnish Co., Toronto, Ont.

VARNISH SPRAYERS

DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

VENEERS

Bury & Company, Robert, Toronto, Ont.
Central Lumber Co., Indianapolis, Ind.
Christman Veneer & Lumber Co., St. Louis, Mo.
Dean Spicker Company, Chicago, Ill.
Empire Veneer Company, Chicago, Ill.
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Geo. Kersley, Montreal, Que.
Korn-Conkling Co., Memphis, Tenn.
Long-Knight Lumber Co., Indianapolis, Ind.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Nartzik, J. J., Chicago, Ill.
National Veneer & Lumber Co., Indianapolis, Ind.
North Vernon Lumber Co., North Vernon, Ind.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Roberts & Co., John N., New Albany, Ind.
Southern Veneer Mfg. Co., Louisville, Ky.
Thompson Veneer Co., W. T., Edinburgh, Ind.
Toronto Veneer Company, Toronto, Ont.
Veneer Manufacturers Co., Chicago, Ill.
Waetjen & Co., George L., Milwaukee, Wis.

VENEER TAPE

Ideal Coated Paper Co., Brookfield, Mass.

VENTILATING APPARATUS

Canadian Blower & Forge Co., Kitchener, Ont.
Sheldons Limited, Galt, Ont.

VENEER JOINTERS

Garlock-Walker Machinery Co., Toronto, Ont.

VENEER MACHINERY

Garlock-Walker Machinery Co., Toronto, Ont.

VENEER PRESSES (Hand and Power)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Company, Wm. R., Toronto, Ont.

VICES

Fay & Egan Co., J. A., Cincinnati, Ohio.

WOOD FINISHES

Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg, Toronto, Ont.
Jamestown Wood Finishing Co., Jamestown, N.J.
Penfound Varnish Co., Toronto, Ont.

WALNUT LUMBER

American Walnut Association, Washington, D.C.
Pickrel Walnut Company, St. Louis.

WOOD SCREWS

Robertson Mfg. Co., P. L., Milton, Ont.

WOOD TURPENTINE

Brown Corporation, Quebec, Que.

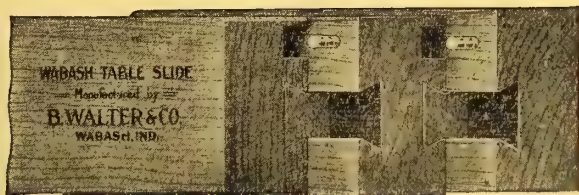
WOOD TURNING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Mattison Machine Works, Rockford, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES

Fay & Egan Co., J. A., Cincinnati, Ohio.

THE SLIDE IS THE HEART OF YOUR EXTENSION TABLE



*If the Slide Does Not Work Properly
Your Whole Table is Condemned*

**Wabash Slides insure
Satisfied Customers**

SLIDE MAKING is a SPECIALTY BUSINESS

We can Furnish Better Slides for Less Cost

**Eliminate Slide Troubles by using
WABASH SLIDES**

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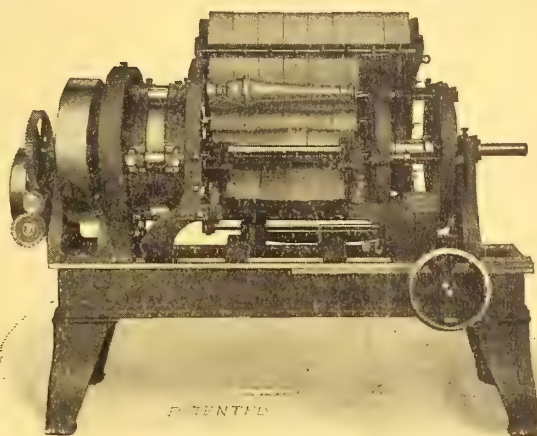
B. Walter & Company

Edsall St., Wabash, Ind.

Canadian Representative:

A. B. CAYA, 28 King St. East, Kitchener, Ont.

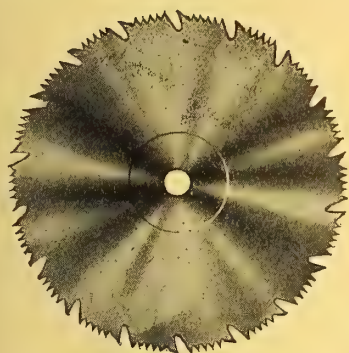
PLUG THE LEAK with a NASH SANDER



If you have no Nash Sander for your furniture or chair turnings, there is a big leak in your sanding department through which your profits are disappearing rapidly.

Hand labor is expensive; use a machine.

J. M. NASH, Milwaukee, Wis.



ATKINS

STERLING QUALITY

SAWS and KNIVES

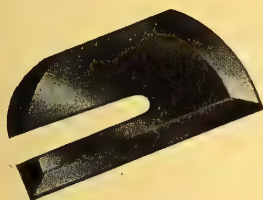
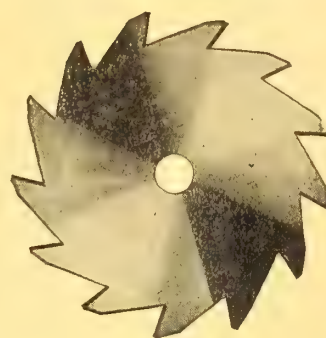
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Atkins Sterling Quality Saws and Knives are proving their superiority by competitive tests in the largest plants of the country. We welcome your most careful investigation, as we know the satisfaction that will result.

Write to-day for our Knife Booklet "CW"
and Pattern Template Paper.

E. C. ATKINS & CO.

Makers of Sterling Saws

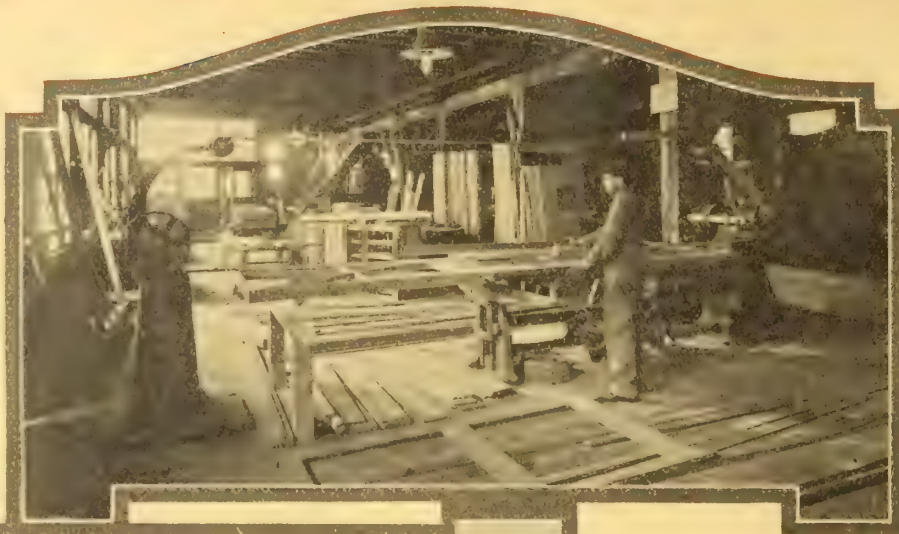


Factory—HAMILTON, Ont.

Vancouver Branch—109 Powell Street

3 Popular Types of Mattison Belt Sanders

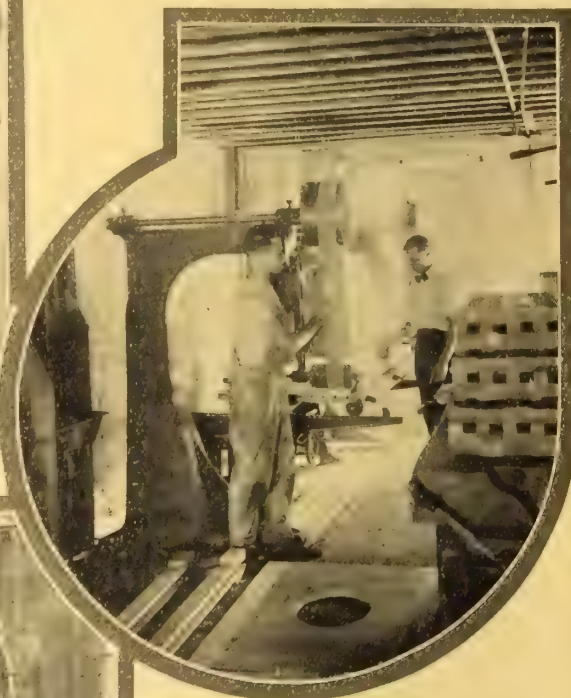
Mile-a-minute Sandbelt Travel combined with the principle of hand sanding make the Mattison "138" Hand Block Belt Sander the most practical all-around type of Sander for the average shop.



The flexible Sandbelt on this machine enables you to handle to better advantage, much work now being done on other Sanders and in addition, a great deal of irregular work no other type of Sander can reach.



The Mattison "136" Double Belt machine is an expansion of the "138." It carries one coarse, and one fine-grained sandbelt, eliminating the re-handling of large veneered panels, and similar work.



The Mattison "134" Universal Open End Sander takes up no more floor space than the "138" and at the same time it's open-end adjustability allows it to handle exceptionally long and bulky work, such as counter tops, cedar chests, phonograph cabinets, etc. The belt may be elevated to any position from the table level to five feet from the floor.



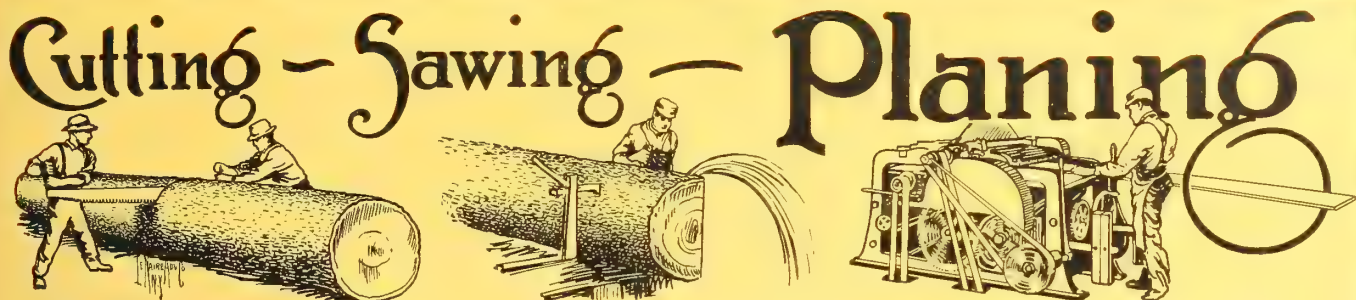
You might be paying for one of these machines right now, and not realizing it. Why not write to us for further specifications, and find out?

Mattison Machine Works, Rockford, Ill., U.S.A.

Selling Representatives for New England, Baxter D. Whitney & Son, Inc., Winchendon, Mass.

CANADIAN WOODWORKER

and
Furniture Manufacturer



The Planing Counts Most

A planer that does its duty often swings the business up to success—buying a planer merits your deep study.

Fully and frankly, we tell you about

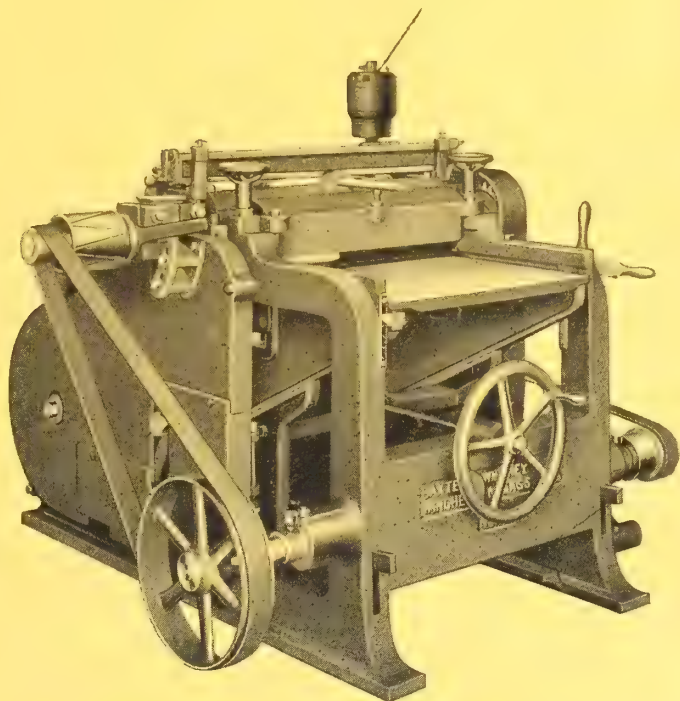
Whitney Planers Single and Double Surfacers

Have features which appeal to every woodworker, such as a rigid frame with ample weight of metal—a BED raised and lowered on SOLID WEDGES operating on wide tracks—a HARDENED CENTER TABLE made extra thick.

An AUTOMATIC CHIPBREAKER that remains the same distance from the cutter head, regardless of the cut taken—DETACHABLE CLAMP CYLINDER BOXES—a cutterhead with long bearings of large diameter and MACHINE-CUT GEARS, are but a few of the features that enable Whitney Surfacers to do superior surfacing at the lowest cost.

Just Write Us a Line

Notice how Whitney Planers are found in wood working shops that are considered representative.



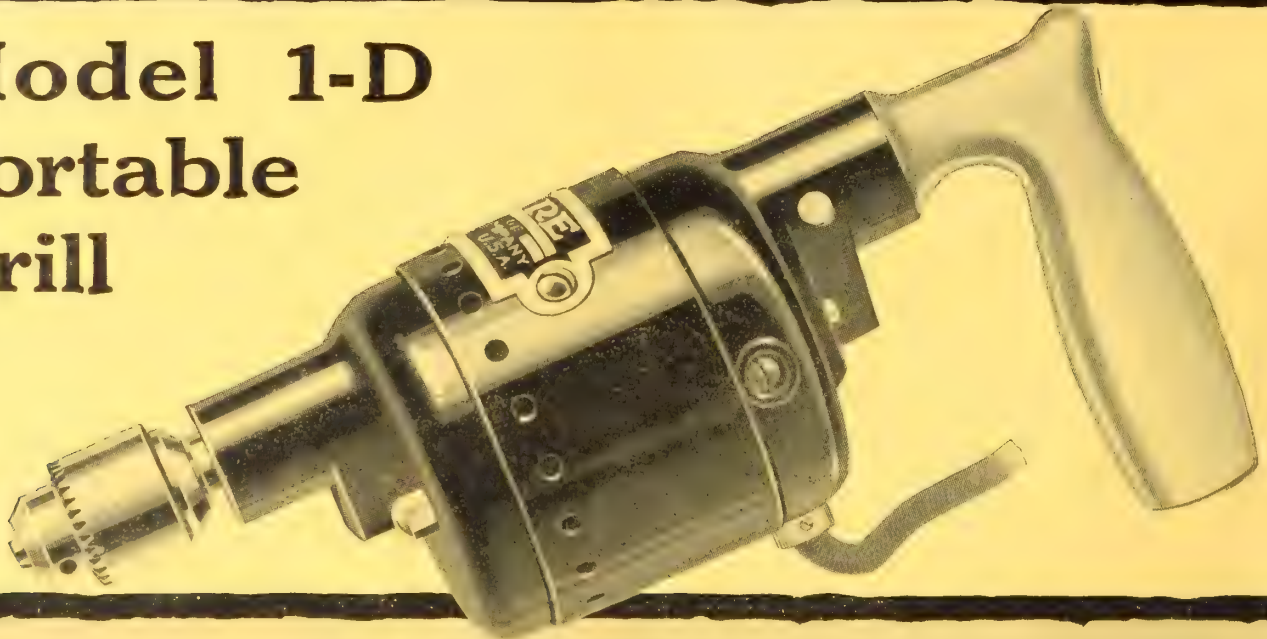
BAXTER D. WHITNEY & SON, Winchendon, Mass.

H. H. Plummer & Co.
451-453 Monadnock Bldg.,
San Francisco, Cal.

New York Office:
World's Tower Building,
110 West 40th Street.
C. L. Babcock, Manager.

Canadian Representatives:
H. W. Petrie, Limited
Toronto, Ontario

Model 1-D Portable Drill



HANDY—ECONOMICAL—EFFICIENT

Specifications:

Length—10 inches.

Weight—4 $\frac{1}{4}$ pounds.

Capacity—Steel, 0 to $\frac{1}{8}$ " Wood and alloys, 0 to $\frac{1}{4}$ ".

Motor—Universal, on either direct or alternating current.

Diameter of Motor—3 $\frac{1}{8}$ inches.

Spindle—Offset from center $\frac{3}{16}$ ".

Helical Gears.

Aluminum Handle.

Complete with 10-ft. cord, plug, switch and chuck.

Jacob's Chucks used as a regular equipment.

FOR speed in drilling and counter-sinking small holes, this tool is just what you need. It can be used on any kind of material—steel, iron, brass, aluminum or wood—and gives lasting service.

If your dealer cannot supply you with the Model 1-D, tell us about your requirements.

Wisconsin Electric Company
7114 Sixteenth Street, Racine, Wisconsin, U. S. A.

DUMORE GEARED ELECTRIC DRILLS

A Page from Our Catalog

AMERICAN WOOD WORKING MACHINERY COMPANY



Showing Table Tilted and Rip Gauge to Left of Saw.

American No. 30 Universal Saw Bench

OUR No. 30 Universal Saw Bench is a machine that will do ripping, cross-cutting and dadoing in an efficient and thorough manner. It will cut a perfect mitre; it will measure any angle instantly and accurately; it will cut off to length or rip to width—all without the operator having to do any previous calculating or even referring to a rule. It is built with extreme care, like an iron-working tool, to insure absolute accuracy of operation. "Built like an iron-working tool" is not merely a phrase with us—it is a fact characteristic of American wood-working machines. We know how, and do make iron-working tools of the highest order and these machines are of the same high class.

CAPACITY—Rips from 1-16 to 27½-in. and cuts off to 31-in. wide when saw is set for 2-in. thick. An 18-in. saw may project 5¾-in. above the table. The table tilts to 45 degrees for bevel sawing. Two 18-in. saws, 1⅛-in. hole, are furnished. If necessary one 20-in. saw (not adjustable) can be used. Dado heads 2½-in. wide can be used.

Write for large illustration and complete details.
Address office nearest you.

CANADIAN SALES AGENTS

Garlock-Walker Machinery Company

Limited

32 Front Street West, TORONTO, ONT.

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Montreal

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NEW YORK

ROCHESTER

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NEW ORLEANS

SAN FRANCISCO

PORTLAND ORE.

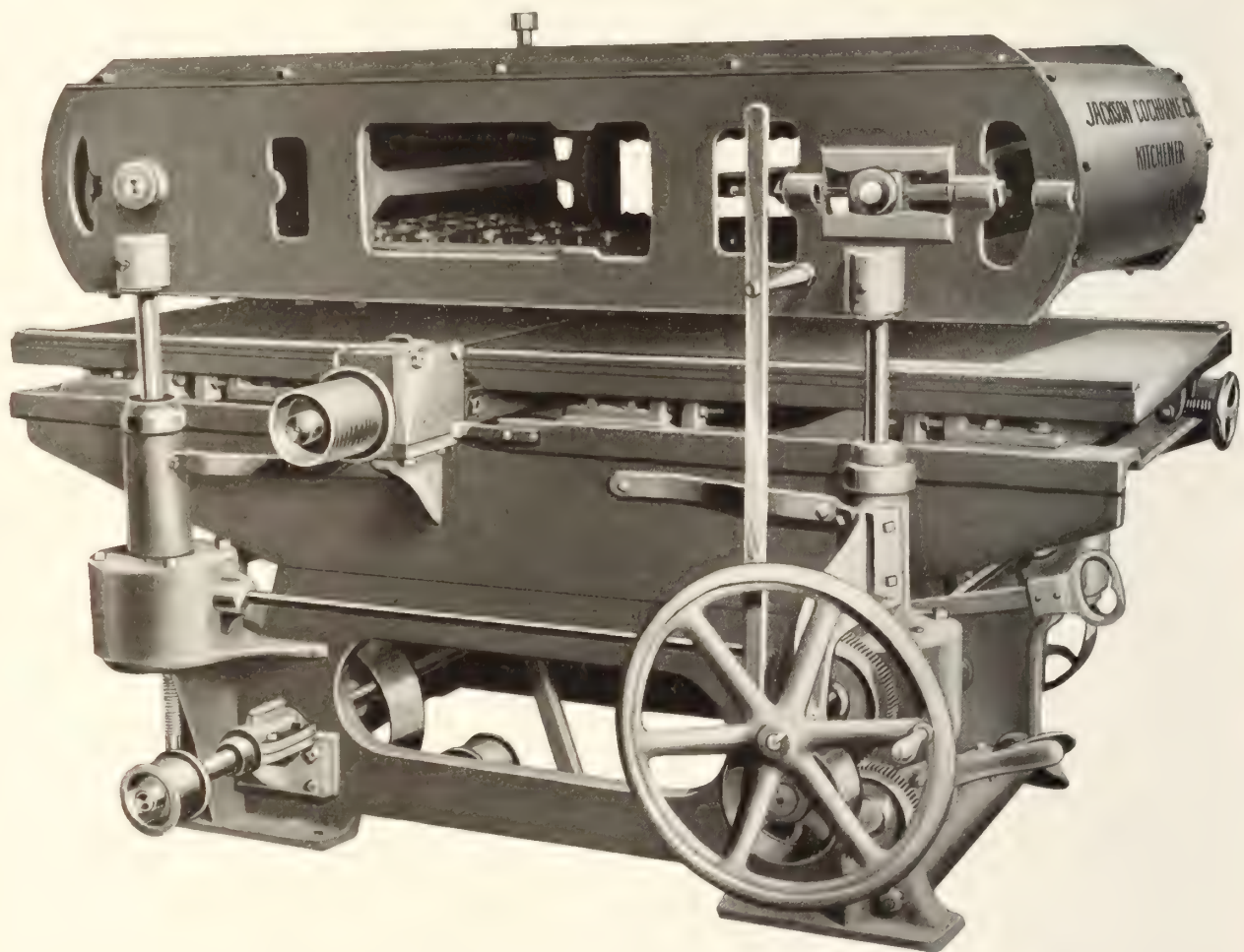
The Herzog Self-Feed Jointer

means

Increased Production
Small Floor Space

Simplicity of Operation
Safety to Employees

Does Four Times the Work of the Hand Jointer

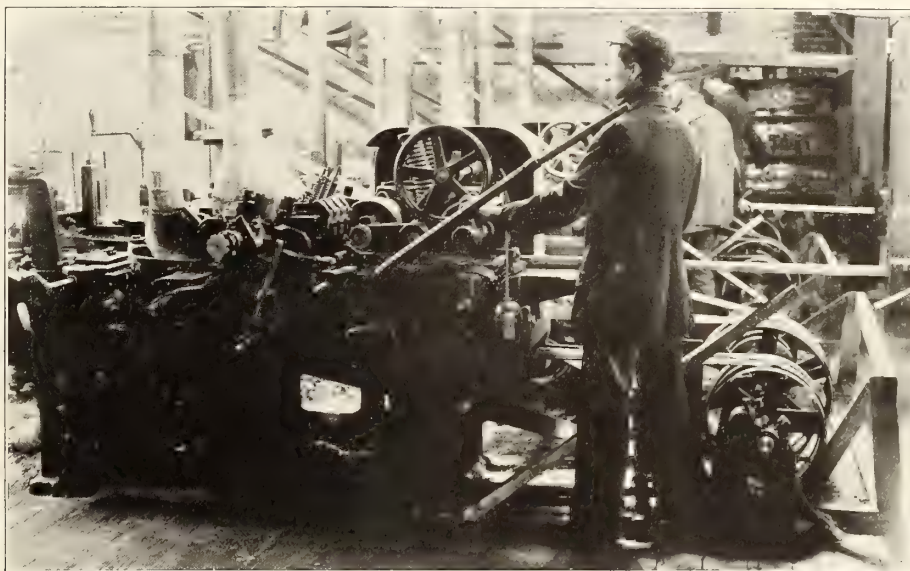


Our No. 34 Herzog Jointer, illustrated above, is one of the most efficient machines on the market to-day. It is appreciated by the manufacturer and employees alike, because, while it will produce from three to five times as much work as the hand jointer, it does not require skilled operators, but eliminates the danger so common to other makes. It can be operated by two boys. It will handle stock varying in width from 1 inch to the full width of the jointer, will feed fast or slow, takes only one-fourth the floor space of hand jointers, and requires only one-fifth of the sharpening of the knives. It is fitted with power feed raising and lowering attachment, with cylinder double belted and driven from both ends.

If interested in reducing your costs, write us.

Jackson, Cochrane & Company
KITCHENER - CANADA

This Moulder Has "Made Good"



"The Invariable Choice of the Man Who Knows."

Yates No. 108 Open Side Moulder

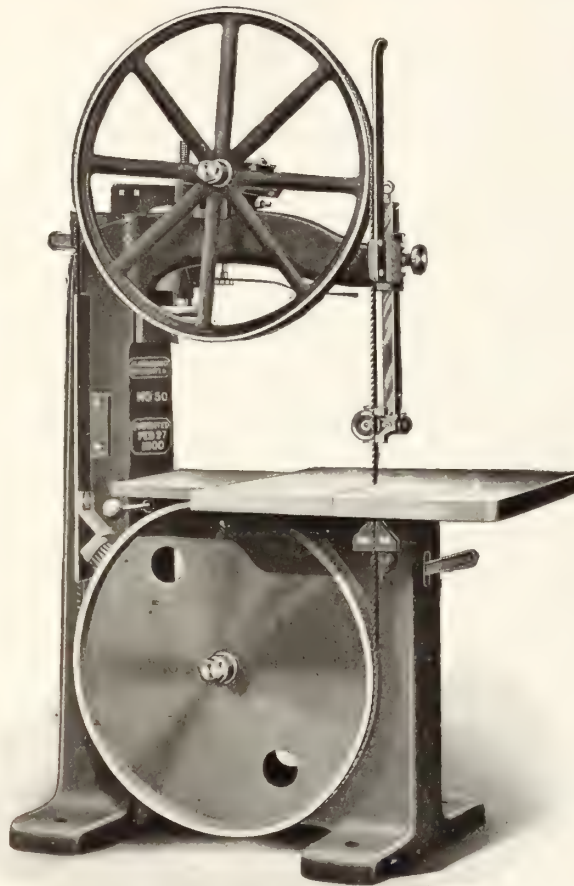
In all sections where moulders are used you will find the Yates No. 108. No other moulder has obtained, and retained, the high opinion of practical millmen all over the continent as has this very efficient machine.

There are over 1,500 in use and they are going as strong as ever. You want our illustrated No. 108 circular if your moulding equipment is not up-to-date. Sent free and without obligation. Write today.



P. B. Yates Machine Co. Ltd.

HAMILTON, ONT. CANADA
U.S. PLANT BELOIT, WIS.



Save 25% to 50% of Blade Upkeep and Power Cost Get Two, Even Three Times As Much Work

It's not the blades that wear out that cost, it's those that break.

It's the broken blades that cut down productive time and cost to repair and to replace.

Blade breakage is reduced to a minimum on Fay-Egan No. 50—36" Square Column "Lightning Line" Band Scroll Saws.

The Fay-Egan "Knife Edge" Blade Tension, made on the principle of a fine laboratory balance scale, is so sensitive that it compensates for changes in atmospheric conditions—yet, so flexible, you can pass a block between blade and wheel, while running, without breaking the blade. Folks tell us blade expense on "No. 50" averages 50 to 75 per cent. less than on the old timers.

The solid lower wheel acts like the fly wheel on your engine, its momentum carrying the load, so that the power consumption is reduced fully one-half, while at the same time it controls the light-spoked upper one, preventing over-running and choking down on a heavy cut.

The heavy square column eliminates vibration and permits the wheels to be revolved at 50 to 100 per cent higher speed, increasing the cutting capacity to double, and in some cases, triple that of the ordinary band saw.

As a user of saws, you cannot afford to ignore what Fay-Egan Square Column Band Saws are doing for others and can do for you. An investigation does not obligate you.

Write for Bulletin M-4

J. A. FAY & EGAN CO.

153-163 W. Front St.

CINCINNATI, O.

The "Shimer Limited" Expansion Head

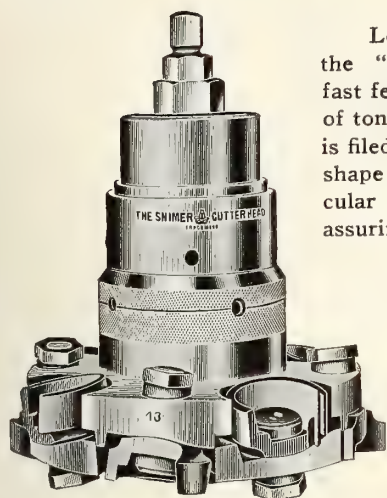


Fig. 627

Let us draw your attention to the advantages of using the "SHIMER CUTTER HEAD" for general Mill and fast feed Planer work. The Cutter is turned to cut the shape of tongue and groove desired, so that to sharpen the cutter it is filed or ground on its face, guaranteeing the user the same shape of cut during the life of the cutter. The bit being circular has from 3½ in. to 5 in. cutting length to the cutter, assuring long wearing life to the cutters.

Note that the cutter, being fastened to a concave seat on a compound angle, assures the user of the proper clearance of cutters, consequently they never burn.

These heads are fitted with or without the Self-Centering Sleeve, and made Expansion or Solid, to suit the customer's wishes.

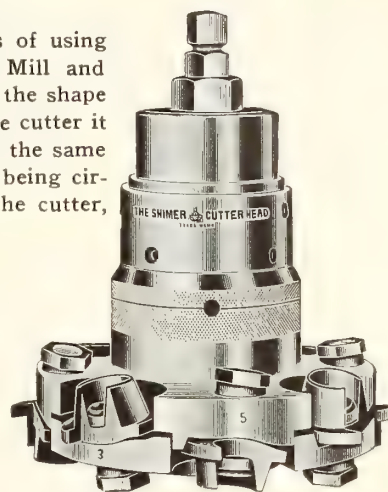


Fig. 268

Shimer Heads have been in use for sixty years, and their reliability and reputation have spoken for them in the past. Let us know your wants and we will guarantee their reliability at the present.

SHIMER CUTTER HEAD CO. OF CANADA, LIMITED

Successors to Samuel J. Shimer & Sons, Inc.

GALT, ONTARIO

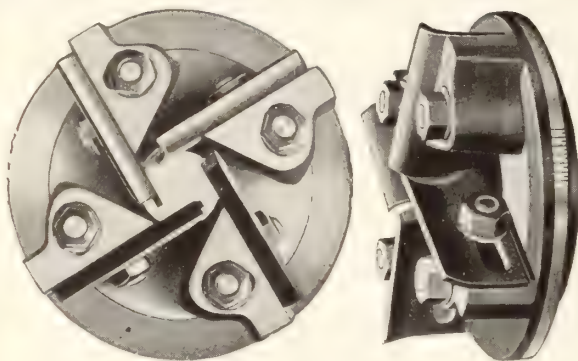


For some years we have specialized on several lines of saws and cutters for box factory, gramophone cabinet and similar work. Our Beaver Dado as illustrated above has won great favor with the trade owing to its adaptability. The combination of bevel wing outside cutters with our multiple tooth inside cutter assures the user that our dado will cut across grain and not chop, thus being far ahead of the one tooth or hook type.

We solicit a trial order to prove their worth

Radcliff Saw Manufacturing Company, Limited

1550 Dundas Street St. West, TORONTO

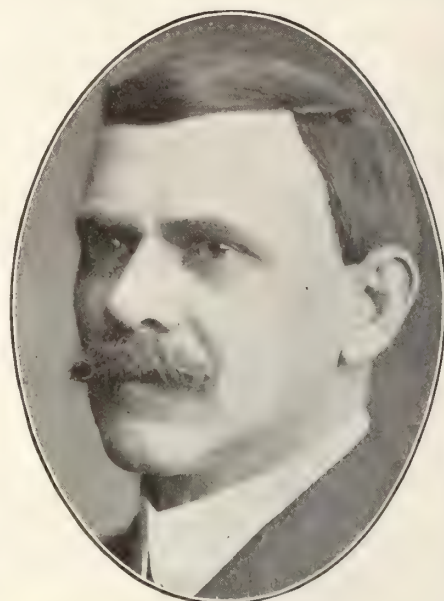
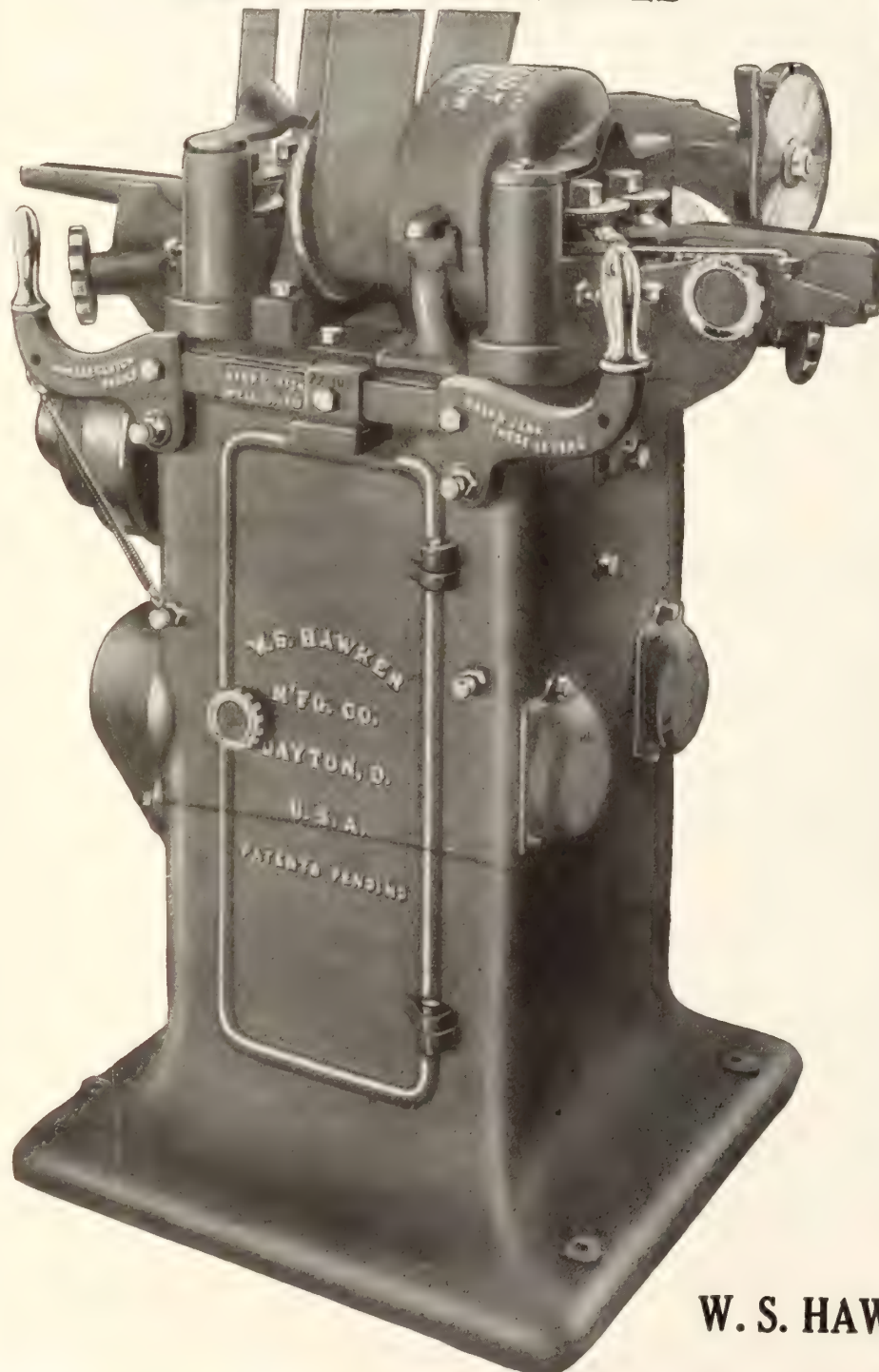


UNIVERSAL ADJUSTABLE CUTTER HEAD Patented.
Infringements (maker or user) will be vigorously prosecuted.

Two Heads

that have put
100% more profit
in the production
of Dowel Stock.

FOR SHIP TREENAILS



W. S. HAWKER.

Inventor and Designer of the World's most
efficient Tubular Turning Machinery

THE Money Maker Adjustable Rod and Dowel Machine

The machine that is sent under a guarantee
to show you a gain of from 100 to 400 per cent.
before you buy it.

The improved dowel machine that 90 per
cent. of the largest and oldest machinery build-
ers and dealers now endorse and recommend in
preference to the solid chuck machines they
themselves previously built.

One cutter head turns from 1/4 in. to 2 in.
diameter.

Turns hard or soft wood equally well.

Handles heavy, oversized squares.

No choking of the cutter head.

Smooth stock.

Accurate sizes.

Works stock as short as five inches.

Rolls automatically centre variations in
squares.

Machines built to turn from 1/8 to 6 in.

We want to hear from every user of a solid
chuck dowel machine.

We can save you from one dollar out of
every two, to four out of every five, that the
operation of solid chuck machines costs you.

Engagements for competitive test solicited.

Formal orders not solicited. All sales made
after demonstration.

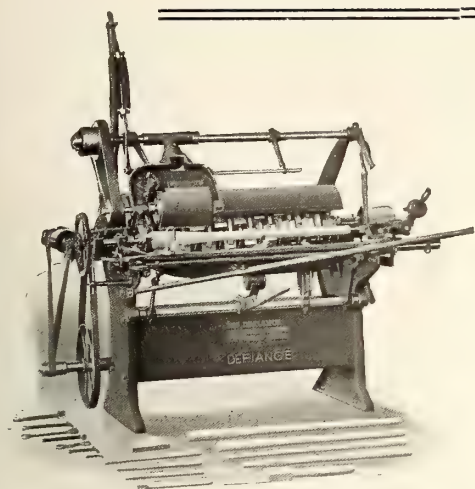
The only question is, are you willing to cut
cost of your dowel turning to one-half or one-
third of what it costs with any make of solid
chuck machine?

Machine delivers the goods before you buy.

State conditions of stock closely.

Special conditions require special equipment.

W. S. HAWKER MFG. COMPANY
DAYTON, OHIO.



42" Patent Automatic Spoke and Handle Lathe



No. 1 Spoke and Handle Blank Saw

Defiance High Productive Spoke^a and Handle Machines

UNEQUALLED IN TURNING A LARGE VARIETY OF SPOKES AND HANDLES

The possibilities of the oscillating table, together with a wide range of adjustments of cutter heads and knives, make Defiance Automatic Spoke and Handle Lathes unequalled in turning a large variety of shapes. Simplicity in Design and Mechanism practically eliminates breakdowns and upkeep cost. Big output in accurate and uniform shapes insures a profitable production.

These machines are made in various sizes, ranging from 18-inch to 58-inch in length. They turn spokes of all kinds for Army Escort Wagons and Artillery Wheels, Farm Wagons and Carriage Wheels, Automobile, Motor Truck, Baby Carriage and Toy Wagon Wheels, etc. They turn handles for small tools, brushes, hammers, hatchets, picks, mauls, etc. Write for illustrated and descriptive circular.

The Defiance Machine Works
DEFIANCE, OHIO, U. S. A.

New York

London

You Have Paid for an Installation of Chapman Double Ball Bearings

in Your Factory over and over again, BUT—

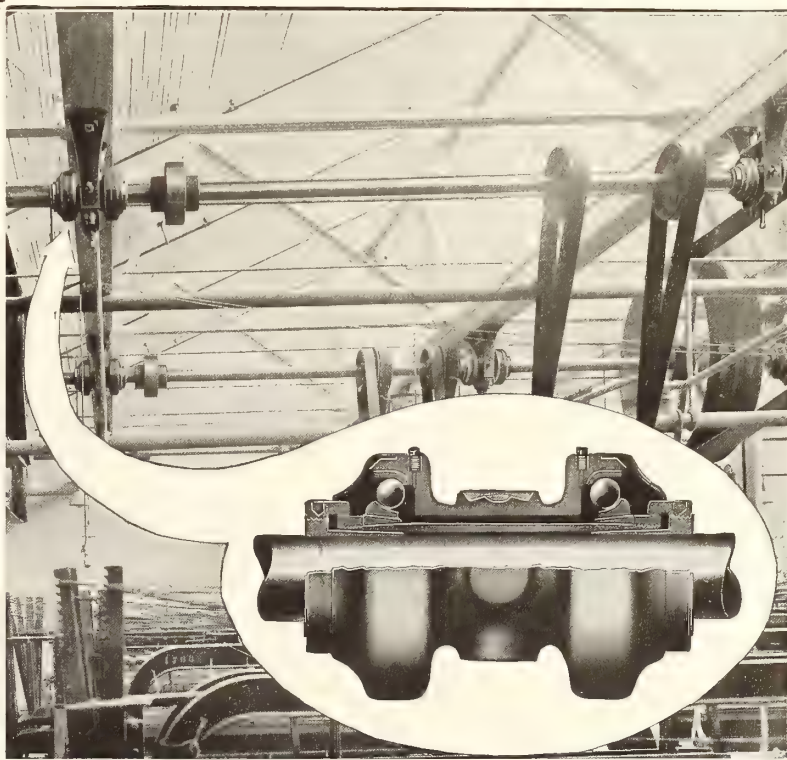
HAVE YOU GOT THEM?

Ordinary line shafting wastes 15 per cent. to 60 per cent. of power.

Line shafting equipped with Chapman Double Ball Bearings will eliminate about 75 per cent. of the friction, thus averaging a total saving of from 15 per cent. to 30 per cent.

Chapman Double Ball Bearings fit any adjustable hanger and require oiling and attention only once a year. No extra equipment required to install.

Send for Catalog No. 3 C.



The Chapman Double Ball Bearing Co. of Canada, Limited

Toronto

339-351 Sorauren Ave.

Ontario

American Branch: The Transmission Ball Bearing Co., Inc., 32 Wells St., Buffalo, N.Y.

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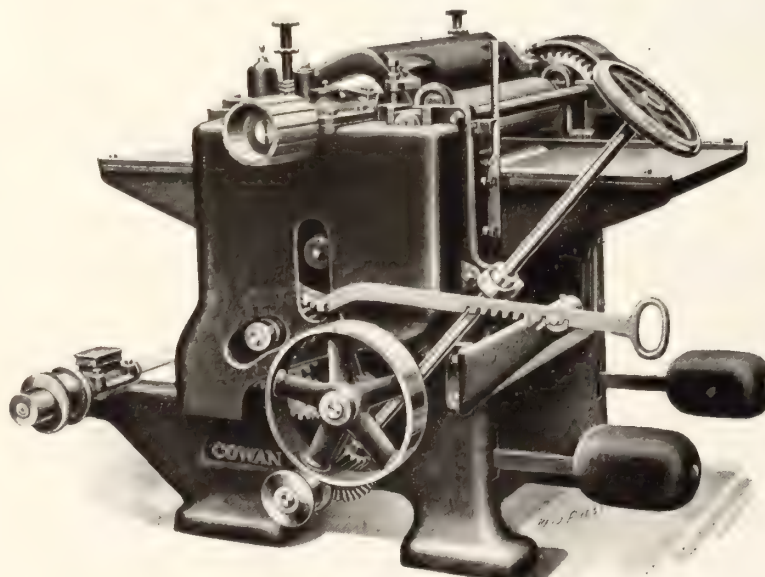
(Continued on page 12)

Surface Planer

141

20", 24" and 26"
x 8"
Four rolls 4 1/2"
all driven.

The most con-
venient and sat-
isfactory Heavy
Pony Surfacers
made.



Planer and
Matchers
Surfacers
Jointers
Moulders
Shapers
Tenoners
Mortisers
Borers
Relish, Mitre and
Dado Machines
Dowel Machines
Wood Lathes
Band Resaws
Band Saws
Circular Saws
Grinders
Sanders
Wiring Machines
Clamps
Veneer Presses

COWAN & COMPANY OF GALT LIMITED
GALT, ONTARIO

"Treat your machine
as a living friend"

SAVE

In Your Veneer Room

50% of Your Present Labor Cost

Four Men to do the Work of Eight!

Keen competition is ahead of you.

To compete **successfully** your equipment should include :

A "Black Bros." Veneer Taping Machine

Let us place one with you on trial and prove—*That it will cut your Labor Cost in two.*

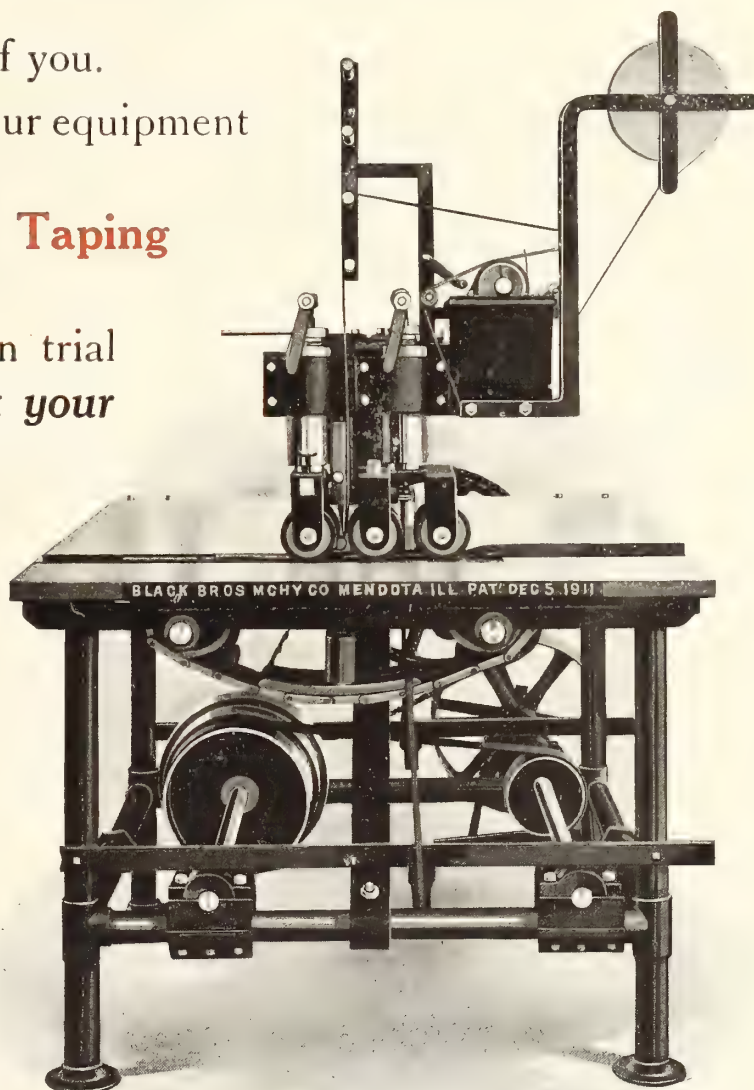
This machine will tape together all kinds of Veneer, no matter whether it be thick or thin, handling both kinds equally well.

It will use the ordinary gum tape, or it will use plain paper tape and put on its own gum or glue just before it is laid.

Built in two sizes—24 in. and 36 in.

**Ask for prices and
particulars**

WE CONTROL THE CANADIAN PATENT
ON THIS MACHINE



"Black Bros." Patented Veneer Taping Machine

The Preston Woodworking Machinery Co.

Preston, Ontario, Canada Limited

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DRY STOCK

Ready for Immediate Shipment

GUM

29,421' 4/4 No. 1 Com. Sap, Hazelwood.	
67,947' 4/4 No. 2 Com., Hazelwood.	
3,000' 6/4 1st and 2ds Red, Whelan.	
6,000' 5/4 No. 1 Com. & Sel., Whelan.	
53,047' 6/4 No. 2 Com. Sap, Whelan.	
8,000' 5/4 No. 3 Com., Whelan.	
1,350' 5/4 No. 1 Com. Sap, Jonesville.	
71,242' 5/4 No. 1 Com. & Sel. Sap "	
104,049' 5/4 No. 2 Com. Sap. "	
14,219' 6/4 No. 3 Common, Yerger.	
11,472' 1/ 6/4 C. & B. No. 1 Sap & Red,	
Yerger.	
1" Com. Sap.	
6/4 " "	
1" FAS "	
6/4 " "	
1" 6/4 Com. Red.	
1" 6/4 FAS "	
8,199' 6/4 1st and 2nds Red, Issaquena	
7,804' 6/4 No. 1 Com. "	
2,347' 6/4 1st and 2nds Sap "	
2,512' 6/4 No. 1 Com. "	
2,375' 6/4 No. 2 " "	
1,800' 1 x 9-12" Box Boards "	
1,305' 1 x 13-17 " " "	

LA. CYPRESS

17,014' 6/4 No. 2 Com. & Btr., Jonesville.	
FAS	
Select	
Shop	
No. 1 Com.	
No. 2 Com.	
5,300' 6/4 No. 1 Common, Jonesville.	
10,300' 6/4 No. 2 " "	
10,478' 8/4 No. 1 " "	
22,493' 8/4 No. 2 " "	
7,937' 4/4 No. 1 Common, Hazelwood	
5,450' 4/4 No. 2 " "	
3,000' 8/4 1st & 2ds " "	
7,128' 8/4 Select " "	
2,977' 8/4 No. 1 Common " "	

PECAN HICKORY

6,300' 4/4 Log Run, Yerger.	
1,890' 6/4 " " Jonesville.	

RED OAK

1,500' 8/4 1st and 2ds Jonesville.	
36,987' 10/4 FAS & 30% No. 1 Com. "	
50,000' 3/4 No. 3 Com., Issaquena.	
10,000' 6/4 No. 1 Com. Pl.—30% FAS, 70%	
White, Issaquena	
24,196' 4/4 No. 2 Com. & Btr. 8' Tie Siding	

LA. WHITE ASH

21,116' 4/4 No. 2 Common, Hazelwood.	
20,350' 5/4 No. 2 " "	
7,741' 6/4 No. 2 " "	
4,773' 8/4 No. 2 " "	
19,724' 5/4 No. 3 " "	
13,260' 8/4 No. 3 " "	
14,252' 4/4 No. 3 " "	

COTTONWOOD

8,000' 4/4 No. 1 Common, Jonesville.	
780' 1 x 7-17" Box Boards "	
1,320' 4/4 No. 2 Com. "	
500' 8/4 Dog Boards "	

MISSISSIPPI ELM

4,580' 12/4 Log Run, Jonesville.	
37,116' 6/4 Log Run, Jonesville & Issaquena	
1 car 1" No. 2 Com. and No. 3 Com. Yerger.	
½ car 6/4 No. 2 Com. & No. 3 Com. Yerger.	

8/4 DOG BOARDS—Small % 6/4

Cypress, 16,200 ft., Jonesville.	
Elm, 7,440 ft., Jonesville.	
Gum, 9,328 ft., Hazelwood.	

ABERDEEN LUMBER COMPANY
PITTSBURGH, PA.

IN 1881

GEORGE W. HARTZELL began converting walnut logs. Thus for thirty-seven years this institution has steadily progressed in its mastery of the problems involved in successful walnut manufacture.

Its notable growth is the result of profiting by experience—by the discovery and adoption of methods and equipment always in advance of current custom.

Hartzell's Choice Walnut is made by such methods from the best known growth of virgin trees—in a region which gave walnut its first claim to fame more than a generation ago.

OUR PRICE ON YOUR
ORDER WILL BE FAIR

Geo. W. Hartzell
Piqua, Ohio.

"Hartzell's

Choice

Walnut"



Red Gum Sap Gum Oak Tupelo

We carry a well assorted stock ready for immediate shipment of all Southern Hardwoods. Make a specialty of loading mixed cars of various grades and thicknesses for the factory trade. We issue a monthly stock sheet showing at a glance delivered prices on everything we have ready for shipment. If you are not receiving these lists, please write us.

P. J. Lawrence Lumber Co.

Sales Office

Syndicate Trust Bldg. St. Louis, Mo., U.S.A.

J. V. Stimson & Co.

Manufacturers and Wholesalers Band Sawn

Hardwood Lumber and Dimension Stock

Band Mills and Yards

OWENSBORO, KY.

Permit us to figure on your needs in Plain and Quartered Red and White Oak, Ash, Poplar and Walnut.

Our "Specialty" is Quality

When Dry Lumber Gets Scarce Remember !

Our dry-kiln is at your service—500,000 feet per month capacity and 10,000,000 feet of lumber from our own band-mills to draw upon.

James E. Stark & Co., Inc.
MEMPHIS, TENN.

Bone Dry

Right now dry lumber is scarce. Here's a list of dry stock ready for prompt shipment. Remember there's 30 years' experience back of every board.

- 1 car 5/8 FAS Plain Red Oak.
- 1 car 5/8 No. 1 Com. Plain Red Oak.
- 10 cars 4/4 No. 2 Com. and Btr. Plain Red Oak.
- 1 car 5/4 FAS Plain Red Oak.
- 1 car 5/4 No. 1 Com. Plain Red Oak.
- 2 cars 6/4 FAS Plain Red Oak.
- 2 cars 6/4 No. 1 Com. Plain Red Oak.
- 1 car 8/4 FAS Plain Red Oak.
- 1 car 8/4 No. 1 Com. Plain Red Oak.
- 3 cars 10/4 FAS Plain Red Oak.
- 1 car 10/4 No. 1 Com. Plain Red Oak.

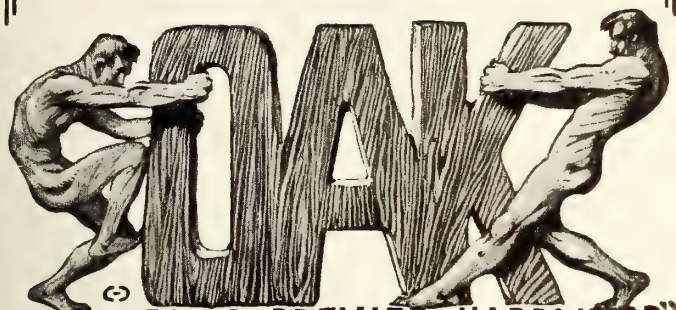
*Write for our Complete List
with Prices*

North Vernon Lumber Co.

NORTH VERNON, IND.

LOUISVILLE, KY. DYERSBURG, TENN.
Every Board Branded "NVLCO." Quality Guaranteed

"YES!" IS THE WORD FOR
AMERICAN OAK TODAY!



"THE WORLD'S PREMIER HARDWOOD"

to **ALERT FURNITURE MAKERS:**
"A WHISPER IS ENOUGH"

From **FILING CABINETS** and other Office Furniture to "the bones of great ships"—**OAK** is **OAK**. (Supreme.)

From **DELICATELY CARVED FURNITURE** for the **DILETTANTE TASTE** to the sills and ribs of great structures whose nobility is in their sheer strength (and to the historic beams of Westminster Abbey) **OAK** is **OAK**. (Supreme.) **GOOD OAK FURNITURE** is "COMING IN."

Without a rival, without an apology, without a substitute, **OAK** is indeed

"*The* **WORLD'S PREMIER HARDWOOD**"

(has been, is and ever shall be), **AND EVERYBODY KNOWS IT.**

Nature will never grow another wood as good as **OAK** for the uses for which it is historically appropriate.

No need to mention Economy—you *know* it.

AMERICAN OAK is **PLENTIFUL, ECONOMICAL, INDISPENSABLE.**

ADMIRE IT. TRUST IT. INSIST ON IT. SPECIFY IT. USE IT. WRITE us. TELL us. ASK us. *We will give you a Straight Personal Letter in prompt reply—WITH ALL THE FACTS.*

Address: Oak Division,

AMERICAN HARDWOOD MFRS. ASSOCIATION
1408 BANK OF COMMERCE BLDG., MEMPHIS, TENNESSEE



Here's
the



REASON

Large timber holdings of exceptionally good stock and modern equipment for manufacturing in large quantities enable us to give our customers the best grades as well as prompt service. Our long list of satisfied customers is the result of our efforts to please.

A Partial List of Stock Now on Hand

- 70,000' 4/4" No. 1 com. Plain Red Oak.
- 40,000' 4/4" No. 3 com. Pl: Red & White Oak Mixed
- 45,000' 8/4" Log Run Pl. Red & White Oak Mixed
- 41,000' 4/4" Cottonwood Boxboards 9"-12".
- 50,000' 8/4 com. & Bet. Quartered Red Gum.
- 100,000' 8/4" com. & Bet. QTD. Red Gum **SND.**
- 77,000' 4/4" No. 1 com. Plain Red Gum.
- 75,000' 4/4" No. 2 com. Plain Red Gum.
- 185,000' 4/4" No. 2 Com. sap Gum.
- 75,000' 6/4" Log Run Elm.
- 135,000' 10/4" Log Run Elm.
- 145,000' 12/4" Log Run Elm.
- 200,000' 10/4" & 12/4" Log Run Maple.
- 125,000' 6/4" to 12/4" No. 2 & No. 3 com. ash.

Memphis Bandmill Co.
Memphis, Tenn., U.S.A.



BELLGRADE LUMBER CO.

MEMPHIS, TENN.

Manufacturers of High Class

Southern Hardwoods

Band Mills at — ISOLA, MISSISSIPPI. LOUISE, MISSISSIPPI AND CARY, MISSISSIPPI

We offer for immediate shipment and subject to prior sale the following desirable dry stock from our own mills

QUARTERED WHITE OAK	QUARTERED RED GUM	12,000' 8/4" No. 1 Com. & Btr.	PLAIN SAP GUM
4,500' 4/4" 1s and 2s (dry).	50,000' 4/4" No. 1 Common.	25,000' 10/4" No. 1 Com. & Btr.	15,000' 4/4" 1s and 2s.
PLAIN WHITE OAK	30,000' 5/4" No. 1 Common.	15,000' 12/4" No. 1 Com. & Btr.	5,000' 5/4" 1s and 2s.
6,000' 4/4" 1s and 2s.	5,000' 6/4" No. 1 Common.		5,000' 6/4" 1s and 2s.
PLAIN RED OAK	3,000' 8/4" No. 1 Common.	PLAIN RED GUM	6,000' 8/4" 1s and 2s.
25,000' 4/4" 1s and 2s.	2,000' 10/4" No. 1 Common.	20,000' 4/4" No. 1 Common.	30,000' 4/4" No. 1 Common.
45,000' 4/4" No. 1 Common.	QUARTERED RED GUM	30,000' 5/4" No. 1 Common.	20,000' 5/4" No. 1 Common.
	Sap No Defect.	3,000' 6/4" No. 1 Common.	5,000' 6/4" No. 1 Common.
	15,000' 5/4" No. 1 Com. & Btr.	2,000' 8/4" No. 1 Common.	5,000' 8/4" No. 1 Common.

Your inquiries by wire will have prompt and careful attention

Are You Prepared "To Ride the Crest" of the Steadily Rising Tide of RED GUM Popularity?

Manufacturers of Desirable Grades of Furniture, those who have their fingers on the pulse of public taste, are rapidly *increasing* their lines of good

RED GUM

"Slow beginners" (known as the ultra-conservatives)—those who follow public taste at a safe distance behind—are *also* using a most unaccustomed quantity of **Red Gum**.

This is the final proof that "Red Gum has COME."

HOW IS YOUR LINE? ARE YOU "TO BAT" or on the bench, "waiting"?

The appropriate grades of **Red Gum**, "America's Finest Cabinet Wood," for good furniture (and trim), for every sort of use, are READY for PROMPT DELIVERY—and at prevailing prices are "the wisest buy for wise buyers" in the whole list of high-class furniture woods today.

Up-to-date architects and "interior landscape artists" are waking up and "giving their clients what they want"—i. e., **Red Gum**. (*ARE YOU?*) IT WILL PAY YOU TO RIDE THE TIDE.

WRITE US FOR ANY INFORMATION YOU WANT. WE'LL GIVE IT TO YOU RIGHT.

ADDRESS: RED GUM DIVISION,

AMERICAN HARDWOOD MANUFACTURERS' ASSOCIATION

1314 Chamber of Commerce Bldg.,

Memphis, Tenn.

Dry Basswood

500,000 Ft. 1 inch

50,000 Ft. 1 1/2 inch

30,000 Ft. 2 inch

Edward Clark & Sons, Ltd.

807-9 Bank of Hamilton Bldg., Toronto

"Gum of Quality" Yazoo River Red Gum

as produced by

**Thomas & Proetz Lumber
Company**

No. 3400 Hall St. St. Louis, Mo.

is carefully manufactured; soft
in texture; dark, rich in color;
and admirably suited for furni-
ture and interior trim.

Mills—Belzoni, Miss.; Catchings, Miss.
Naples, La.

If you are not buying from us, write today.

Perfection in Quality and Service

Service that is prompt and accurate is a big factor in our dealings and at the same time the acme of quality always prevails. We make a specialty of supplying Sap, Red Gum, Crating and Southern Hardwoods. Let us know your requirements in factory stock including all grades and thicknesses of Cypress, Sap, Red Tupelo and Black Gum, Cottonwood, Oak, Elm, Sycamore and Ash. We can ship immediately on receipt of your order.

Cornelius Lumber Company
ST. LOUIS, Mo., U. S. A.

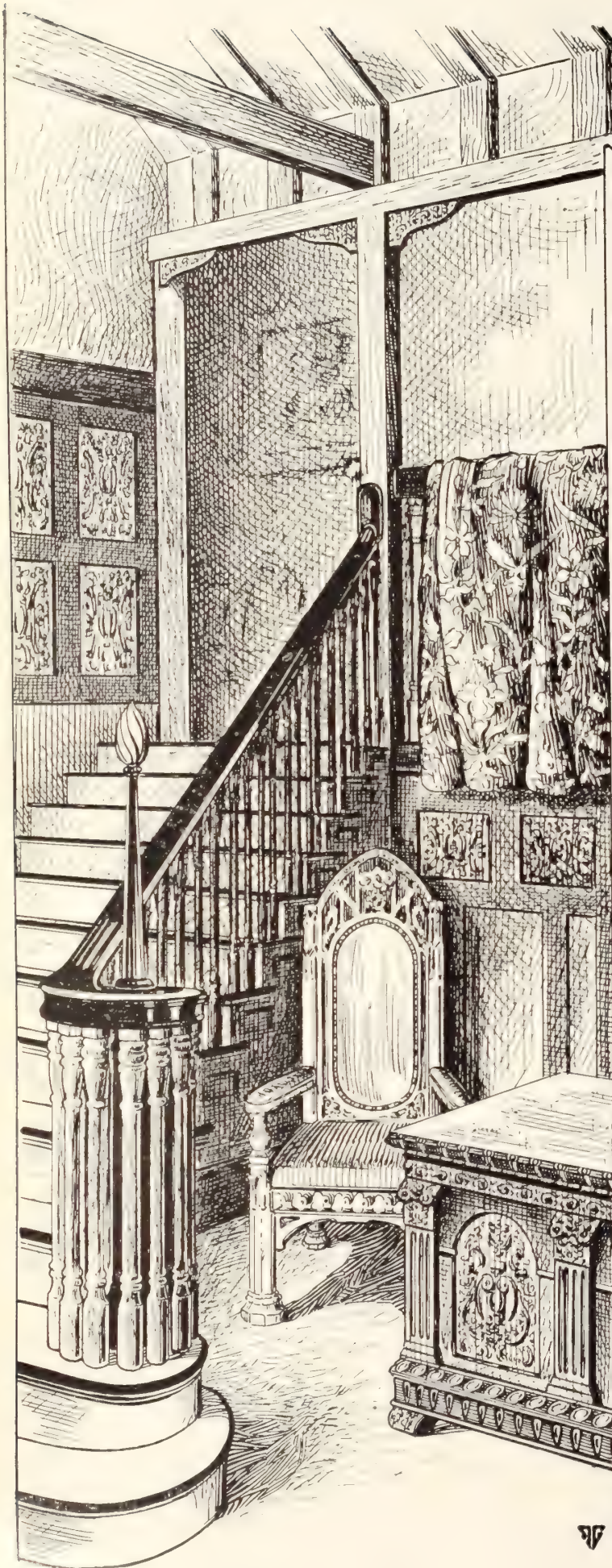
ATTENTION: "Auto Body and Furn. Manfgs."

We are one of the few firms
in the country handling

White Ash Exclusively

We sort it to meet all requirements. **Tough** texture and **Medium** texture. Can furnish **Special Widths** and **Lengths** one to four inches thick. Write or wire when needing **WHITE ASH**.

THOMPSON, KATZ LUMBER CO.
Memphis, Tenn.
Cable Address "TomKats"



IOWA WALNUT

The War Brought It Out

The absolute insistence of our Government upon American Black Walnut for gunstocks (and for aeroplane propellers to the limit of our capacity) developed the fact that the amount of American Walnut still available is more than ample for our domestic uses of several generations to come!

Its qualities are so incomparable among all hardwoods that it is no wonder that Walnut is classed as the supreme cabinet wood of the world. If you inspect the palaces and museums of Europe and America you will get quite an awakening—and you will then be glad that Walnut is still plentiful and that you can secure your supply—and at most reasonable prices.

Send us a list of your
needs.

Des Moines Sawmill Co.
DES MOINES, IOWA



Band Mill and Yards, Memphis Plant

We Desire to Emphasize the Fact That All Stock Listed is Dry and Ready for Immediate Shipment, with the Exception of Items Marked * which are 30 to 60 Days Dry.

PLAIN RED OAK

*15M' 4/4 1s and 2s
 *80M 5/4 1s and 2s
 100M 6/4 1s and 2s
 50M 8/4 1s and 2s
 12M 10/4 Com. and Bet.
 110M 11/4 Com. and Bet.
 117M 12/4 Com. and Bet.
 25M 15/4 Com. and Bet.
 15M 4/4 No. 1 Com.
 100M 5/4 No. 1 Com.
 80M 6/4 No. 1 Com.
 50M 8/4 No. 1 Com.
 14M 5/4 No. 2 Com.
 75M 6/4 No. 2 Com.
 100M 6/4 No. 2 & 3 Com.
 60M 4/4-8/4 No. 3 Com.

ASH

7M' 5/4 1s and 2s
 10M 4/4 No. 2 Com.
 55M 6/4 No. 2 Com.

TUPELO

5M 6/4 1s and 2s

CYPRESS

9M' 4/4 Com.
 2M 6/4 Com.

GUM BOX BOARDS

5M' 13-17
 35M 9-12

PLAIN WHITE OAK

45M' 6/4 No. 1 Com.
 2M 10/4 Com. and Bet.
 38M 11/4 Com. and Bet.
 1M 12/4 Com. and Bet.
 7M 15/4 Com. and Bet.
 15M 8/4 No. 1 Com.
 18M 10-12/4 No. 1 Com.
 4M 4/4 No. 2 Com.
 25M 6/4 No. 2 Com.

C. & B. PLAIN RED GUM

70M 6/4 Com. and Bet.
 15M 4/4 1s and 2s

C. & B. QRT'D RED GUM

9M' 4/4 Com. and Bet.
 15M 6/4 No. 1 Com.

PERSIMMON

3M' 4/4 Log Run.

QRT'D RED OAK

1M' 6/4 1s and 2s
 2M' 4/4 No. 1 Com.

LOG RUN ELM

37M' 6/4
 15M 8/4
 15M 10/4
 10M 5/4-6/4 No. 3 Com.
 14M 6/4-8/4 No. 2 Com.

QRT'D WHITE OAK

*15M' 4/4 1s and 2s
 *15M 4/4 No. 1 Com.
 1M 10/4 No. 1 Com.
 6M 4/4 No. 2 Com.
 8M 6/4 No. 2 Com.
 2M 8/4 No. 2 Com.

PLAIN SAP GUM

8M' 4/4 No. 1 wide
 *30M 4/4 1s and 2s
 *30M 6/4 1s and 2s
 *30M 4/4 No. 1 Com.
 *30M 6/4 No. 1 Com.
 90M 5/4 No. 1 Com.
 90M' 4/4 No. 2 Com.
 60M 5/4 No. 2 Com.
 200M 6/4 No. 2 Com.
 30M 8/4 No. 2 Com.
 15M 5/4 No. 3 Com.
 7M 12/4 No. 3 Com.

QTD. SAP GUM

2M' 10/4 No. 1 Com.
 14M 10/4 No. 2 Com.
 11M 12/4 No. 2 Com.

OAK BRIDGE PLANK

50M' 12/4 6" and up

HICKORY

15M' 6/4 No. 3 Com.
 1M 10/4 No. 3 Com.

We are sawing some nice Oak logs and are in position to furnish Sound, Square Edge Boxed Heart Mixed Oak Timbers in sizes from 6 x 6 to 8 x 8—12, 14, and 16' long. Also 3" x 6" and up mixed Oak Bridge Plank.

**"DIRECT FROM PRODUCER TO CONSUMER"
 WIRE YOUR ORDER AT OUR EXPENSE**

GAYOSO LUMBER COMPANY

MEMPHIS, TENNESSEE

Two Conclusive Proofs Why You Should Buy Your Lumber From Us



Examine closely the picture above, then read the following letter we received a few days ago from one of the largest manufacturers of Mouldings in the world. (Lumber for Mouldings must be absolutely flat and straight.)

"We have been using exclusively gum lumber, both sap and red, shipped by you for the last three years, and have been well pleased with its character, both as to grade and condition. The condition of same being an evidence of careful handling before shipping. We have been well pleased with the transactions which we have had with you, and will endeavor to continue using your stock as long as available."

We also manufacture Oak, Ash, Elm, and Cypress at Louise, Miss., mills. Get our prices before placing your orders and become a SATISFIED user of Gum or one of the other Southern hardwoods.

BARR-HOLADAY LUMBER CO.

GREENFIELD - OHIO

SOUTHERN HARDWOODS Dry Lumber in Buffalo for Quick Shipment

BASSWOOD				
	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	35,700	2,200	172,000	24,000
1 1/4 in.	144,300	12,000	146,500	65,800
1 1/2 in.	36,600	.....	24,800	11,000
2 in.	20,900	.....	15,000	4,500
2 1/2 in.	75,000	.....	20,900	13,000
3 in.	5,550	.....	6,500	3,900

BUTTERNUT				
	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	15,300	.....	35,800	19,600
2 1/2 in.	3,000	.....	3,000	.....

TENNESSEE SCENTED RED CEDAR				
	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	18,500	.....	15,800	1,500
1 1/2 in.	4,100	.....	800	.....

CHERRY				
	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	154,000	24,000	129,200	66,500
1 1/4 in.	3,500	.....	3,600	6,400
1 1/2 in.	31,000	.....	17,700	73,300
2 in.	10,100	.....	17,200	30,900
2 1/2 in.	4,500	.....	800	.....
3 in.	6,700	.....	2,300	.....
4 in.	3,900	.....	1,200	1,600

CHESTNUT				
	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
3/4 in.	147,900	10,700	21,300	94,500
1 in.	88,800	1,300	10,200	38,200
1 1/4 in.	45,500	.....	4,000	.....
1 1/2 in.	23,200	.....	52,300	107,200
2 in.	2,700	.....	850	.....
2 1/2 in.	1,800	.....	1,300	.....
3 in.	900	.....	.....	.....
4 in.	.....	.....	.....	.....

RED GUM				
	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	60,300	.....	13,200	.....
1 1/4 in.	8,200	.....	9,200	.....
1 1/2 in.	9,000	.....	11,300	.....
2 in.	7,100	.....	4,800	.....

PLAIN RED OAK				
	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	30,200	.....	.....	.....
1 1/4 in.	97,000	.....	25,400	6,200
1 1/2 in.	8,500	.....	.....	.....
2 in.	220,200	2,700	10,500	10,400
1 1/4 in.	11,700	2,400	14,500	7,200
1 1/2 in.	73,900	4,300	20,200	24,000
2 in.	38,100	.....	45,800	.....
2 1/2 in.	23,100	.....	4,000	.....
3 in.	23,800	.....	8,500	.....
4 in.	3,600	.....	3,900	.....

QUARTERED RED OAK				
	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
3/4 in.	72,200	8,300	38,800	800
1 in.	500	.....	400	.....
1 1/4 in.	.....	.....	550	150
1 1/2 in.	1,000	.....	7,400	.....

PLAIN WHITE OAK				
	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
3/4 in.	23,400	.....	.....	.....
1 in.	11,300	.....	.....	.....
1 1/4 in.	28,150	.....	21,300	.....
1 1/2 in.	39,900	.....	22,000	17,000
2 in.	22,300	.....	13,000	15,200
1 1/4 in.	76,300	.....	17,000	6,000
1 1/2 in.	50,500	.....	50,400	10,000
2 in.	49,000	.....	101,000	2,000
2 1/2 in.	113,800	.....	35,500	.....
3 in.	54,800	.....	39,800	4,400
4 in.	21,000	.....	1,500	.....

QUARTERED WHITE OAK				
	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 1/2 in.	5,500	.....	.....	.....
1 1/4 in.	84,500	25,400	128,600	.....
1 1/2 in.	.....	.....	.....	.....
1 in.	29,400	12,800	4,000	15,000
1 1/4 in.	10,000	.....	6,400	1,300
1 1/2 in.	1,500	.....	2,000	2,300
2 in.	6,500	350	5,100	2,700
2 1/2 in.	800	.....	.....	.....

HICKORY				
	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
1 in.	2,200	.....	2,300	600
1 1/4 in.	.....	.....	400	350
1 1/2 in.	5,000	.....	2,300	1,000
2 in.	12,350	.....	13,600	10,700
2 1/2 in.	7,000	.....	5,000	.....
3 in.	400	.....	5,500	.....
4 in.	200	.....	200	.....

POPLAR				
	1 & 2	Clear Strips	No. 1 Com.	No. 2 Com.
18 in. & up	1 & 2	Boards	Bright Saps	Bright Saps
1 1/2 in.	16,200	36,000	11,600	40,200
1 in.	2,800	3,900	.....	11,000
1 1/4 in.	5,300	7,600	.....	21,000
1 1/2 in.	.....	32,600	.....	22,000
2 in.	.....	25,800	.....	28,000
2 1/2 in.	.....	5,900	.....	32,600
3 in.	.....	27,000	.....	1,300
4 in.	.....	.....	.....	.....

Also Large Stock of ASH, BEECH, BIRCH and MAPLE

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto
MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y.

Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY

Indiana

Quartered Red and White

OAK

1,000,000 feet of dry stock carried
at all times

ALSO PLAIN OAK AND ASH

We manufacture all stock carried

Evansville Band Mill Co.

FRANK M. CUTSINGER, Pres.
GEO. H. FOOTE, Vice-Pres. & Treas.
JOSEPH WALTMAN, Secretary

Mills at EVANSVILLE, Indiana

OUR QUALITY HARDWOOD PROTECTS YOU

High Class Dry Stock

*A partial inventory of our Furniture
Dry Stock ready for immediate shipment*

SOFT ELM

5/4" FAS, No. 1 & 2 Com. 16,400'
1" FAS, No. 1 & 2 Com. 49,290'
1 1/2" FAS, & No. 1 Com. 37,610'
2" FAS, & No. 1 Com. 90,471'
2 1/2" FAS, & No. 1 Com. 72,280'
3" FAS, & No. 1 Com. 85,348'

PLAIN OAK

1" FAS & No. 1 Com. 12,716'
1 1/4" FAS & No. 1 Com. 23,100'
1 1/2" FAS & No. 1 Com. 11,390'
2" FAS & No. 1 Com. 267,478'
2 1/2" FAS & No. 1 Com. 296,138'
3" FAS & No. 1 Com. 121,960'
4" FAS & No. 1 Com. 45,586'

BASSWOOD

1" FAS, No. 1 & 2 Com. 15,690'
3" FAS, No. 1 & 2 Com. 12,200'

SOFT MAPLE

1 1/2" FAS, No. 1 & 2 Com. 12,400'

HARD MAPLE

1" FAS & No. 1 Com. 12,373'
1 1/2" FAS & No. 1 Com. 15,188'
2" FAS & No. 1 Com. 50,076'
2 1/2" FAS & No. 1 Com. 214,744'
3" FAS & No. 1 Com. 24,096'

CRATING

3/4" Elm 1 car
1" Elm 1 car
1 1/2" Elm 1 car
1 1/2" Beech & Maple 1 car
3" Beech & Maple 2 car

WALNUT

1" FAS, No. 1 & 2 Com. 9,200'

QTD. WHITE OAK

1" FAS & No. 1 Com. 18,900'

We are prepared to supply
you with Quality Hardwood

**John I. Shafer
Hardwood Co.**

**South Bend
INDIANA**

WE OFFER IMMEDIATE SERVICE.

We Operate 4 Band Mills

and carry large stocks of

**Quartered White Oak
Quartered Red Oak
Plain White Oak
Plain Red Oak**

Ash

Poplar

Hickory

Walnut

Gum

Elm

Maple, etc.

Crating and Dimension Stock a Specialty

Can furnish you highly satisfactory
stock at right prices—TRY US.

MALEY & WERTZ
EVANSVILLE, INDIANA

HUNT, WASHINGTON & SMITH

Nashville,

Tennessee

Manufacturers of

Quartered and Plain White Oak

Poplar - Ash - Chestnut

Tennessee Red Cedar

Gum and Cypress

Canadian Representative

W. R. YOUMANS

1050 College St.

Toronto, Ontario

Dry Spruce and Birch

Good Stocks, Prompt Shipments, Satisfaction

C. A. SPENCER, Limited

Wholesale Dealers in Rough and Dressed Lumber

Offices—500 McGill Building
MONTREAL - - - Quebec

POPLAR GUM BIRCH

For prompt shipment we carry in stock large quantities of Rotary Cut, Sliced and Sawed Veneers and Southern Hardwood Lumber.

Send us your inquiries—our prices and service will insure future business.

Christmann Veneer & Lumber Co.

3750 N. Second St., St. Louis, Mo.

MAHOGANY WALNUT OAK

F. T. DOOLEY, President.

T. E. JONES, Secy.-Treas.

F. T. Dooley Lumber Co.
Inc.

MANUFACTURERS and WHOLESALERS
of

SOUTHERN HARDWOODS

Plain and Quartered Oak
Cypress, Gum, Ash
Soft Maple and Elm

Send us your inquiries

Memphis ∴ ∴ Tennessee

Hardwoods

We can furnish you immediately Factory Stock including all grades and thicknesses of

Walnut, Chestnut
Mahogany, Teak, Oak
Ash, Cypress

ALSO

VENEERS

Oak, Maple, Walnut and
other Fancy Woods

The McLennan Lumber Co.

Limited

MONTREAL

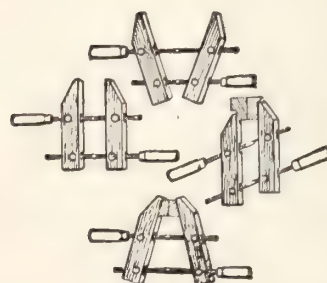
American Hardwood Lumber Co.

St. Louis, Mo.

Large stock of—

**Dry Ash, Quartered Oak
Plain Oak and Gum**

Shipments from — NASHVILLE, Tenn.,
NEW ORLEANS, La., and BENTON, Ark.



"JORGENSEN" the Efficiency Clamp

Adjustable Steel Spindle Clamps that hold better and are far superior. Their guarantee against breakage protects you. Write for further particulars.

If you cannot buy them from your Jobber write us direct.

Adjustable Clamp Company
216 N. Jefferson St., Chicago, U.S.A.

AMERICAN WALNUT

The Supreme Cabinet Wood

The Eternal Youth of Walnut

Ponce de Leon came to the new world in search of the legendary "fountain of youth". He never found it but the famous cabinet makers of his time were more successful, for they were using the only wood that remains unchanging throughout the Ages. Ponce de Leon may well have planned his voyage while sitting in one of the famous leather backed Spanish Chairs of walnut, which to this day retain their eternal youth. Both Antiquity and modern scientific engineering tests have set the seal of approval on walnut as the one enduring supreme cabinet wood.

In the great war when nations, individuals and materials were given the supreme test

Walnut more than made Good

*Write for our Walnut Booklet which will be out Soon
It is interesting - and costs you nothing.*

American Walnut Manufacturers' Association
Room 425, 115 Broadway, New York.

St. Francis Basin Hardwoods

DRY STOCKS AVAILABLE FOR QUICK SHIPMENT

Tennessee Aromatic Red Cedar

DELIVERED PRICES AND DESCRIPTIONS CHEERFULLY FURNISHED

Oak Timbers Cut to Order

SAP GUM

	Feet
4/4" Common and Better Qtd.	50,000
8/4 Common and Better Qtd.	5,000
4/4 1st and 2nd—18" and up, Plain...	25,000
4/4 Box Boards, 13/17"	75,000
4/4 Box Boards 9/12"	50,000
4/4 1st and 2nd, 13/17"	35,000
4/4 No. 1 Common	50,000
4/4 No. 1, 2 and 3 Common	300,000
5/4 1st and 2nd	3,000
5/4 No. 1, 2 and 3 Common	18,000
6/4 No. 1, 2 and 3 Common	200,000
8/4 No. 1 and 2 Common	4,000

PLAIN RED GUM

	Feet
4/4" 1st and 2nd	85,000
4/4 No. 1 Common	200,000
4/4 No. 2 Common	60,000
5/4 1st and 2nd	5,000
6/4 1st and 2nd	35,000
6/4 No. 1 Common	75,000

QUARTERED RED GUM

	Feet
3/4" Common and Better	600
4/4 1st and 2nd	50,000
5/4 1st and 2nd	1,000
6/4 No. 1 Common	8,000
8/4 No. 1 Common	100,000
10/4 Common and Better	4,000
12/4 Common and Better	23,000

FIGURED RED GUM

	Feet
4/4" 1st and 2nd Plain	12,000
4/4 No. 1 Com. Plain	10,000
6/4 Common and Better Plain	8,000
4/4 1st and 2nd Qtd.	20,000
8/4 1st and 2nd Qtd.	5,000
10/4 1st and 2nd Qtd.	9,000
12/4 1st and 2nd Qtd.	2,500

MISCELLANEOUS

	Feet
4/4" Shop and Btr. Cypress	6,000
4/4 No. 3 Ash	1,000
5/4 No. 3 Ash	6,000
6/4 No. 3 Ash	7,000
6/4 Log Run Cottonwood	4,000
4/4 Mill Run Persimmon	8,000
6/4 L. R. Hackberry	1,000

4/4 L. R. Pecan	700
5/4 L. R. Pecan	8,000
6/4 No. 3 Pecan	40,000
8/4 No. 3 Pecan	5,000

PLAIN RED OAK

	Feet
4/4" No. 2 Common	18,000
6/4 Common and Better	22,000
6/4 No. 2 Common	12,000
8/4 No. 2 Common	4,000

QUARTERED RED OAK

	Feet
4/4" No. 1 Common	30,000
4/4 No. 2 Common	3,000
5/4 No. 2 Common and Better	1,200
6/4 No. 2 Common	3,000

PLAIN WHITE OAK

	Feet
4/4" No. 1 Common	30,000
6/4 No. 2 Common	4,000
6/4 No. 2 Common	30,000
10/4 Common and Better	20,000
12/4 Common and Better	13,000

QUARTERED WHITE OAK

	Feet
3/4" Common and Better	300
4/4 Common and Better Strips	4,000

MISCELLANEOUS OAK

	Feet
4/4" No. 2 and S. W.	7,500
4/4 No. 3 Common	75,000
5/4 No. 3 Common	5,000

SOFT ELM

	Feet
4/4" Log Run	150,000
5/4 Log Run	200,000
6/4 Log Run	150,000
4/4 No. 3 Common	25,000
5/4 No. 3 Common	3,000
6/4 No. 3 Common	50,000

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SOFT MAPLE

	Feet
4/4" Log Run	3,000
5/4 Log Run	5,000
6/4 Log Run	25,000
12/4 Log Run	1,500
16/4 Log Run	35,000

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ASH		QUARTERED RED GUM		90 8/4 No. 1 Com.		80 8/4 No. 2 Com.	
9M 5/8 No. 1 Com.		5M 4/4 FAS		15 8/4 No. 2 Com.		8 10/4 FAS	
5 5/8 No. 2 Com.		2 4/4 No. 1 Com.		50 10/4 FAS		20 10/4 No. 1 Com.	
3 5/4 FAS		3 5/4 FAS		75 10/4 No. 1 Com.		6 10/4 No. 2 Com.	
19 5/4 No. 1 Com.		9 6/4 FAS		15 10/4 No. 2 Com.		3 12/4 No. 1 Com.	
25 5/4 No. 2 Com.		3 6/4 No. 1 Com.		50 12/4 FAS		14 12/4 No. 2 Com.	
7 5/4 S. W.		90 8/4 FAS		75 12/4 No. 1 Com.			
4 6/4 No. 1 Com.		90 8/4 No. 1 Com.		15 12/4 No. 2 Com.		QUARTERED WHITE OAK	
8 6/4 No. 2 Com.		4 10/4 FAS				50M 3/4 No. 1 Com.	
4 6/4 S. W.		50 10/4 No. 1 Com.		PLAIN RED OAK		3 3/4 No. 2 Com.	
15 10/4 FAS		3 12/4 FAS		30M 4/4 FAS		30 4/4 FAS	
% 10/4 No. 1 Com.		90 12/4 No. 1 Com.		30 4/4 No. 1 Com.		60 4/4 No. 1 Com.	
24 10/4 No. 2 Com.		7 16/4 FAS		15 4/4 No. 2 Com.		25 4/4 No. 2 Com.	
6 12/4 No. 2 Com.		% 16/4 No. 1 Com.		50 5/4 FAS		8 5/4 FAS	
COTTONWOOD		PLAIN SAP GUM		90 5/4 No. 1 Com.		15 5/4 No. 1 Com.	
15M 4/4 FAS		5M 5/8 FAS		90 5/4 No. 2 Com.		3 5/4 No. 2 Com.	
30 4/4 No. 1 Com.		30 5/8 No. 1 Com.		3 6/4 No. 2 Com.		3 8/4 FAS	
7 8/4 No. 1 Com.		20 5/8 No. 2 Com.		50 8/4 FAS		9 8/4 No. 1 Com.	
% 8/4 No. 2 Com.		2 3/4 FAS		90 8/4 No. 1 Com.		6 8/4 No. 2 Com.	
ELM		48 3/4 No. 1 Com.		50 8/4 No. 2 Com.		CLEAR FACE STRIPS	
12M 5/8 No. 2 Com. & Btr.		14 3/4 No. 2 Com.		4 10/4 FAS		Sap No Defect	
32 4/4 No. 2 Com. & Btr.		15 4/4 FAS		26 10/4 No. 1 Com.		10M 4/4 2-2½	
30 10/4 No. 2 Com. & Btr.		90 4/4 No. 1 Com.		30 10/4 No. 2 Com.		18 4/4 3-3½	
90 12/4 No. 2 Com. & Btr.		40 4/4 No. 2 Com.		4 12/4 No. 2 Com.		10 4/4 4-4½	
32 16/4 No. 2 Com. & Btr.		15 4/4 wide BB		QUARTERED RED OAK		10 4/4 5-5½	
30 10/4 No. 2 Com.		15 4/4 W. Pan.		1M 3/4 FAS		15 4/4 No. 1 Com.	
40 12/4 No. 2 Com.		2 5/4 FAS		9 4/4 FAS		2 3½ wide.	
TUPELO GUM		30 5/4 No. 1 Com.		5 4/4 No. 1 Com.		SOUND WORMY OAK	
40M Log Run 4/4		18 5/4 No. 2 Com.		5 4/4 No. 2 Com.		30M 4/4	
FAS		5 6/4 FAS		12 5/4 FAS		40 5/4	
No. 1 Com.		5 8/4 FAS		30 5/4 No. 1 Com.		80 8/4	
No. 2 Com.		4 8/4 No. 1 Com.		14 5/4 No. 2 Com.		SYCAMORE	
Wide Box Boards.		50 8/4 No. 2 Com.		1 6/4 No. 1 Com.		55M 12/4 Log Run	
PLAIN RED GUM		20 10/4 No. 2 Com.		12 8/4 No. 1 Com.		WALNUT	
30M 4/4 FAS		10 12/4 No. 2 Com.		10 8/4 No. 2 Com.		5M 4/4 No. 1 Com.	
70 4/4 No. 1 Com.		QUARTERED RED GUM		PLAIN WHITE OAK		6 4/4 No. 2 Com.	
2 5/4 FAS		Sap No Defect		10M 4/4 No. 1 Com.		6 6/4 No. 1 Com.	
30 5/4 No. 1 Com.		25M 4/4 FAS		12 4/4 No. 2 Com.		6 6/4 No. 2 Com.	
2 6/4 No. 1 Com.		39 4/4 No. 1 Com.		20 8/4 FAS		5 8/4 No. 1 Com.	
2 8/4 FAS		50 8/4 FAS		60 8/4 No. 1 Com.		6 8/4 No. 2 Com.	
10 8/4 No. 1 Com.							

MAY BROTHERS

MILLS and OFFICE

Canadian Representative: C. BEUMER, Guelph, Ont.

MEMPHIS, TENNESSEE

Stock of Black Walnut Lumber

Ready for Prompt Shipment

August 1, 1919

Thickness	1sts & 2nds 6—10"	1sts & 2nds 10—14"	1sts & 2nds 14" and up	1sts & 2nds 6—7 ft.	1sts & 2nds 4—5½ ft.	No. 1 Selects	No. 1 Common	No. 2 Common	Clear Strips	Clear Face
1/2 inch	70450	.....	.....	2100	.....	2100	63200	44200	.....	.....
5/8 inch	21760	.....	.....	2700	.....	3620	75700	78900	.....	.....
3/4 inch	45250	5200	.....	1500	1050	3300	48800	39600	.....	.....
4/4 inch	119900	.....	2500	7200	6000	149900	315700	618600	.....	.....
5/4 inch	24600	7200	1000	1200	1200	7100	37200	51200	1000	.....
6/4 inch	12100	4000	800	500	200	3800	113300	87700	600	.....
8/4 inch	13100	7400	900	250	100	5800	36700	104600	1200	.....
10/4 inch	11800	.....	.....	500	300	4400	159400	20100	.....	.....
12/4 inch	6900	.....	.....	.....	.....	.....	27400	3600	.....	.....
16/4 inch	5800	.....	.....	.....	.....	.....	6300	1300	.....	.....

**We can also furnish Mexican Mahogany, White Ash, Yellow Poplar,
Cherry and Plain and Quartered White Oak**

The Kosse, Shoe & Schleyer Company

Eastern Branch
Baltimore, Md.

Main Office and Band Mill
Cincinnati, O.

I have the following stock for immediate shipment

- 1 Car 2 in. and 3 in. Hard Maple.
- 1 " 2 in. and 3 in. Soft Elm.
- 1 " 2 in. Canadian White Oak.
- 1 " 1 in. and 2 in. White Ash.
- 1 " 1¼ in. Basswood.
- 1 " 1 in. Basswood.
- 1 " 2 in. Canadian Chestnut.
- 3 " 1 in. Spruce Crating.
- 5 " 5/8 in. Spruce Crating.

Besides the above stock I can supply anything in Oak, Gum, Chestnut and White Oak from ¼ in. to 4 in. West Virginia stock either plain or quarter sawn. Try a car of my West Virginia Plain White Oak and Chestnut.

Excelsior and Wood Wool always on hand in Kitchener.

Write, Wire or Phone Your Inquiries

PERCY E. HEENEY

202 Weber Chambers, KITCHENER, ONT.

BLACK WALNUT

Large Stock ready for immediate shipment, also Well Assorted Stocks at our Yards and Mills

in West Virginia and Kentucky

OAK

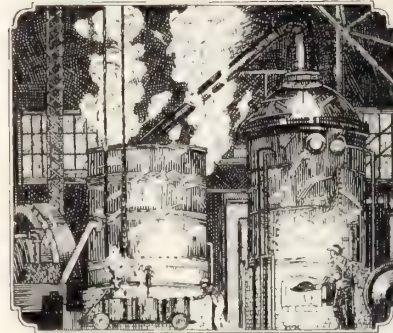
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Basswood and Poplar

Prices and stock list on request

Burns & Knapp
Lumber Company
CONNEAUTVILLE, PA.

Wood Turpentine

(MADE IN CANADA)



THE Canadian Wood Turpentine — made at our mills at La Tuque, P.Q., is an excellent diluent and solvent and contains no free rosin.

This Turpentine is made by an improved laboratory process from Canadian woods and its distinctive odor clearly indicates that it is a different product from that given by the older methods of distillation.

Further and complete information gladly sent upon request.



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CORPORATION**

Sales Office:

56 St. Peter Street
Quebec, P.Q.

Hardwood Dowels

Plain, Straight and Spiral Grooved



"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co. Limited

ORILLIA ONTARIO

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Cable Address: "Special," Orillia, Can.

Holly Ridge Lumber Co.

Incorporated

MAIN OFFICE
LOUISVILLE, KY.

This Company markets only the products of its own Band Mills located at

HOLLY RIDGE, LA.
MONROE, LA.
MEEKER, LA.
ST. LANDRY, LA.

These mills are sawing logs removed from the lands of this Company, owned by it in fee simple.

It is our policy to make high grades and to ship our customers exactly what they buy, and in no instance do we mix the grade.

These mills are producing Gum, Ash, Elm, Oak and Cypress.

A consumer placing business in the hands of this Company is assured of having direct shipments from the producer to the consumer, and that the business will be conducted on a high plane in every respect.

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J. H. Bonner & Sons

Memphis, Tenn.

Mills:

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Band Sawn Hardwood Lumber

Write or wire for prices on

Gum, Oak, Elm, Etc.

Southern Hardwoods

Our mills now producing high grade stock, well manufactured, including:

Poplar, Chestnut, Basswood
Buckeye, Hickory, Red and
Sap Gum, Plain and Quartered Red and White Oak.

Agricultural and other special purpose stock, Oak Planking, Railway Material, Heavy Timbers, in fact almost anything in the line of Hardwood Lumber.

Buskirk-Rutledge Lumber Co.
Cincinnati, Ohio.

OAK

Plain and Quartered
Uniform Color—Soft Texture

Poplar, Ash and other Hardwoods

We have 35,000,000 feet dry
stock—all of our own manu-
facture, from our own timber
grown in Eastern Kentucky

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The Hyde Lumber Co.

Band Mills: LAKE PROVIDENCE LA.

Southern Office: MEMPHIS, TENN.

Bank of Commerce Bldg.

Northern Office: SOUTH BEND, IND.

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Quartered Red Gum

Plain Sap Gum

Quartered Sap Gum

Cottonwood, Cypress

Tupelo, Ash, Elm, Oak

CHARLES O. MAUS

Canadian Representative

H. W. Darby Hardwood Lumber Company

Manufacturers of

Hardwood Lumber

Red and Sap Gum a Specialty

Gum, Oak, Tupelo, Poplar
Ash, Elm, Cypress

Rooms 1531-33 Bank of Commerce & Trust Bldg

MEMPHIS, TENN.

Mills at :

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“The Cabinet Wood Superior”

Nature has given cabinet makers and interior trim workers many ideas to realize their ambitions of producing designs of character.

Nature has also given the “Cabinet Wood Superior” to assist in applying these designs.

“The Cabinet Wood Superior” Is, Without Question American Black Walnut

The soft tone, deep lustre and delicate shades of rich brown color of American Black Walnut places it above all others.

Consider well the class of wood you use and we venture the assertion, your decision will be

American Black Walnut “It’s Classy”

Walnut Exclusively—All Grades and Thicknesses.

Pickrel Walnut Company

St. Louis, Missouri

SOUTHERN HARDWOODS

Well Manufactured from Good Timber

Unexcelled Quality and Service

For twenty-five years Paepcke Leicht quality hardwoods have satisfied the most exacting users in the wood-working industries of the United States, Canada and Europe.

Strict uniformity of inspection and quality year after year, with a truly superior service, have consistently kept old customers on our books.

Your interest, also, lies where you can get the most in satisfaction and value.

We Specialize in Oak and Gum

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Mahogany (250,000 ft. in stock, all kinds)
Walnut
Qtd. White Oak
Plain Red Oak
Poplar
Gum
And all U. S. A. Hardwoods

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Basswood
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And all other Canadian Hardwoods.

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Plain Oak
Mahogany (all kinds)
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ROTARY CUT
Birch, Poplar, Ash, Gum, Walnut, Basswood, Maple
SLICED
Mahogany, Walnut
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We also Specialize in

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See our Veneers as used exclusively in the Curtiss Aeronola,
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Toronto, August, 1919

No. 8

Are You Prepared to Meet an Acute Lumber Shortage?

One of the main reasons to which the present high hardwood prices may be attributed, is the inadequate stocks of lumber that are held by the lumber manufacturers and wholesalers. Perhaps a few figures would help to bring home to the average lumber user the significance of the above statement.

In January, 1919, the lumber manufacturers and dealers of the United States had on hand stocks, consisting of walnut, oak, red gum and other woods, in excess of 500,000,000 feet. From January to June, owing to an increased demand and a curtailment of production, this stock had been reduced to, in round figures, 100,000,000 feet. During June and July further inroads were made on this available lumber, and today it is doubtful if the stocks on hand would total 75,000,000 feet.

A reduction of from 500,000,000 feet to 75,000,000 feet in eight months means that, basing it on the doubtful supposition that all lumber consumers were able to purchase their requirements, the amount of lumber produced during those eight months was 425,000,000 feet less than the demand.

This demand has not diminished, in fact, such things as a slight easing of the situation in regard to ocean tonnage and an improvement in the unfavorable exchange rate that exists between the United States and Britain have tended to increase the number of buyers who are clamoring for stock.

The lessened output of lumber has been caused largely by adverse weather conditions in the lumber producing districts preventing the loggers from

WILL YOU TAKE THIS TO HEART?

Did you ever stop to think what a tremendous power for good your trade paper could be to you and your fellow manufacturers if every subscriber would use it to the best advantage—if they would only send in their views, ideas and suggestions as they occur to them and ask for information when needed? Suppose that you for one just try it. You will be surprised to see how much more interested you will be in your own business and the tremendous benefits that would result would surprise even the most enthusiastic. No one should hesitate about sending in a good idea from the spirit of selfishness, for where he might be giving away one idea he would be receiving hundreds in return. While it is undoubtedly true that we all are working for the "Almighty Dollar," the best way to secure it is to co-operate in the upbuilding of the trade at large, and co-operation is most valuable in this respect.

bringing the logs out of the woods. Now when these conditions have improved and the millmen were hoping that they would be able to carry on at full capacity, it is found that an acute car shortage has developed in many hardwood centres. This car shortage not only makes shipments uncertain, but prevents the operators bringing the logs from the forests to the mill. A large number of mills are only running part time, owing to their inability to secure the logs that are lying at the different sidings. In addition the microbe of unrest has permeated the camps and mills in the northern and southern lumber districts, lessening the efficiency of the workmen and further reducing the amount of lumber produced.

It does not appear that present production will be increased to any appreciable extent, and as the demand is in excess of the amount being produced it is only a question of a few months until all available stocks may be exhausted and some manufacturers forced to do without the lumber necessary to keep their plants in operation.

We feel that we cannot lay too much stress on the seriousness of the lumber shortages or urge too strongly that every manufacturer take all the steps necessary to ensure an adequate supply of this vital raw material for the next year and a half or two years. There are a large number of lumber advertisements appearing in this journal—all of fair dealing, reputable firms—and many of these advertisers have stocks consisting of various hardwoods on hand.

It would be advisable to check over these different advertisements and make enquiries in an endeavor to learn where a grade of material best suited to your requirements, both present and future, may be secured. There is an old saying that is applicable to the lumber outlook, and that is that "foresight is better than hindsight." Now is the best time to exercise your foresight.

Details of Sash and Door Construction

Windows Designed for Warmth and Appearance—Increased Comfort from Properly Constructed Door and Window Frames—Casement Windows are Popular

By W. H. Shaw

It is curious how architectural habits prevail year after year, even when there is very little reason for their acceptance. Thus the 2,000 architects said to be practising in Canada would find it hard to present a convincing argument in favor of the form of windows in general use in Canada, and yet their use persists.

Examine the windows of an average city residence, or an apartment house. In nine cases out of ten they will be found to consist of two sashes each, filled with one pane of glass, wholly without either character or beauty. The somewhat blank expression of these buildings is due, very largely, to the arrangement of their windows, and to the failure of the windows to perform the full measure of their service. It must be remembered, to admit light into a room is not the sole function of a window; one of its duties is to give definite expression and character to the building in which it is placed.

To appreciate the truth of this theory one needs only to examine a number of city residences in the older part of any city, where many of the houses still have small panes in their windows. The small-paned windows possess a dignity and decision which is wholly lacking in their neighbors.

Casement Windows Becoming Popular

The foreign casement is steadily growing in favor in Canadian country homes, and especially in the type of bungalow home for which there is a craze all over the country. Not only are architects drawing it in their new plans, but owners of long built, double hung sash windows are putting in their place the quaint casement of romance. The old name for windows was windore—a door for the wind to pass in and out. In the hot summer months they ventilate a room better than do the sashes that slide up and down.

This preference extends to commercial buildings, where good ventilation, safe window cleaning and the doing away with the curtain and drapery nuisance are appreciated. This is the recognition of the utilitarian quality of a window considered antiquated.

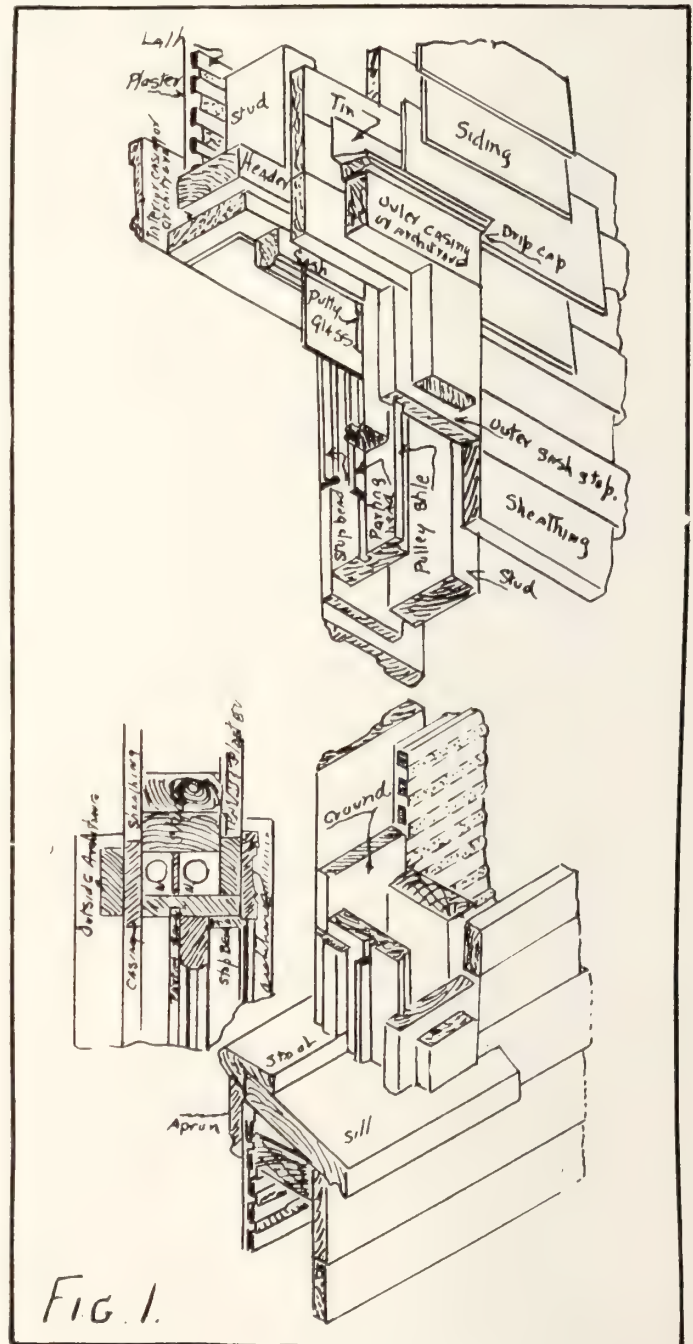
According to the sort of casement and fastenings chosen, this revival may be a blessing or a curse in the home. Where the opening is six or seven feet high, with sill upon the floor, it is called a French window—almost universally used in France, and beautiful for an exit that opens on lawn or verandah. Far less formal is the shorter casement, set well above the floor, with upper part divided to form a transom. It is perfectly adaptable to Canadian cottages and bungalows that claim no English prototype.

Careful Construction Needed

Builders claim that it would never have fallen into disfavor had it been well constructed, to keep out the weather. In the French casement, opening inward, the rain entered at the bottom; in the English and German style, opening outwards, the rain entered at the top.

Anglo-Saxons, more sensitive to domestic discomfort than were the rest of Europe, got tired of the nuisance. Instead of setting themselves to perfect the

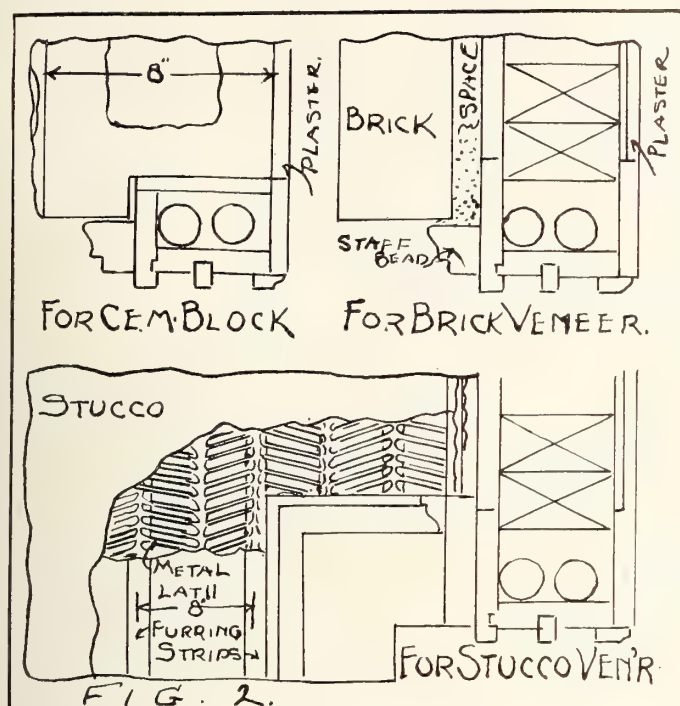
existing window, they invented another—the double hung sash. This did keep out the rain, and probably its main disadvantages are, that when poorly constructed, the sash stick when new, and rattle when old. As we shall always have the tendency to stick



Sash and frame with adjacent construction

to Anglo-Saxon ideas, and the consideration of Canadian climate, the double hung sash will continue to be used where service is considered.

Window and door frames should be correctly and



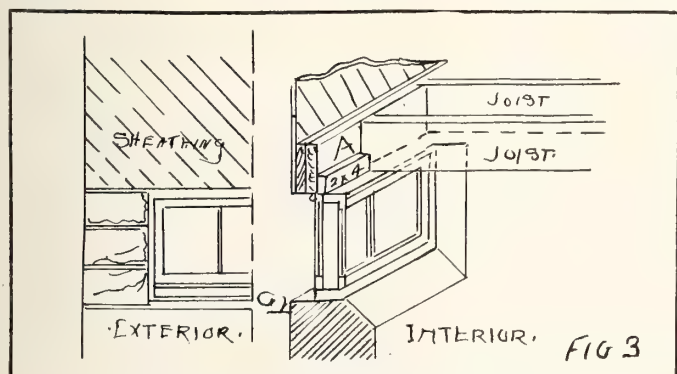
Box frames adapted to various walls

carefully made, for it is here that cold finds its way into the house, rather than through the walls.

Figure 1, of frame construction, shows the sash, stops, frame, inner and outer casings, and all the adjacent construction, such as plaster, studding, sheathing and siding all carefully marked. Note the little tongue on the "pulley style," which fits into the "outer sash stop." This makes a tight joint, keeping the cold out of the weight box, the space between the pulley style and the first stud. It is often the absence of this tongue that makes a current of cold air noticeable at the pulleys. The "outer sash stop" should always be wide enough to nail to the first stud and the building paper, which covers all the exterior sheathing, should be carried well over it under the "outer casing." Note the "drip cap" with the protecting tin over it turned up under the siding.

The "ground" is shown forming the inner side of the weight box, extending over to the stud and making a tight joint with the plaster. The inside casing covers the "ground" and extends over on the plaster. The sheathing shown in the figure would, in the best practice, be placed diagonally.

Figure 2 shows the box frame adapted to walls built of various materials. For stucco veneer note that the only difference is that furring strips are nailed eight inches on centers directly to the sheathing over



Plank casement frame rabbetted for sash

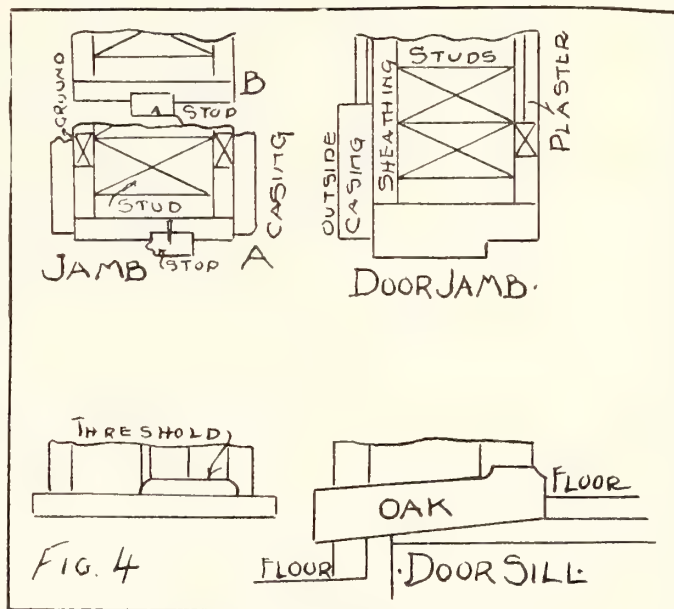
the building paper, on which to nail the metal lath. A small moulding must be placed about all outside casings, either door or window, to provide for the extra thickness of the stucco finishing coat.

For brick veneer staff beads take the place of the outside casings, as shown. It is made to receive the storm sash or screen, $1\frac{3}{8}$ inches thick.

The third sketch shows the construction of an ordinary plank casement frame, rabbetted on the inside for $1\frac{3}{8}$ sash hinged at top. The outside is rabbetted $1\frac{3}{8}$ to receive the screen or storm sash. A small staff bead makes a finish against the masonry. Two part windows requiring an area should not be used in modern work, owing to the unsightly condition of the area in a short time. If desired, their construction will be identical with box frames already described. Additional light may be had by introducing extra single sash windows, all above grade.

Figure 4 shows an outside door jamb at the right for frame construction. The inner edge of the jamb is rabbetted for the door, either $1\frac{3}{8}$ or $1\frac{3}{4}$ inches. The rabbet for the screen and storm door is formed by the outside casing $1\frac{3}{8}$ inches thick.

Double studs are carried around all openings as



Construction and details of door frame

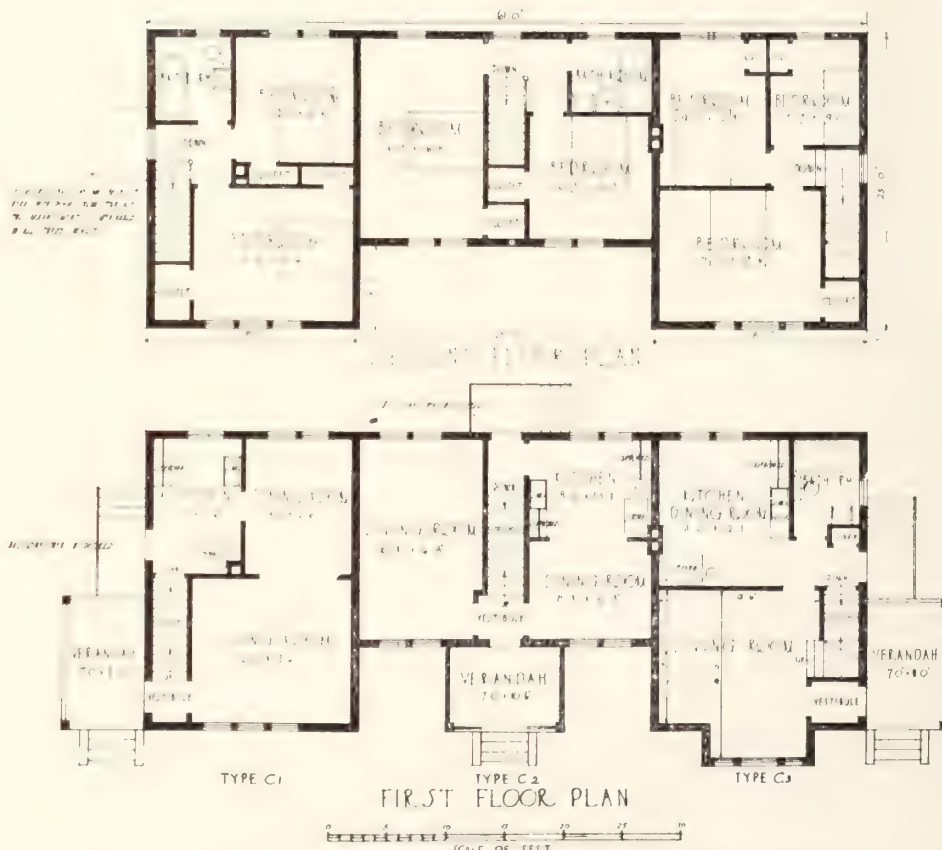
shown. The door sill is best of oak, of the pattern shown, with a pitch outward to shed moisture. This jamb may be readily used in masonry by placing a staff bead the same as that used for the window frames, instead of the outside casing. Some nail the staff bead directly on the casing which is made narrower, because when the masonry is built up around it, an absolutely air tight job is secured.

At A, figure 4, is shown the jamb of an ordinary interior door, with the "stop" glued and screwed in place and the casing on either side. Grounds are nailed to the stud before plastering, to make a good nailing place for the finish. In many cases grounds are omitted, and the stop is not plowed in, but simply nailed flat to the jamb. The threshold is shown in position, but is being used less every day for inside doors.

The jamb of a pantry door, to swing both ways, is shown at B, figure 4, and the stop from which the door is hung is indicated at the centre. The finish is put in about the opening, the same as for a single action door.

Alternative Designs for Five-Roomed Homes

Waste Space Has Been Reduced To a Minimum Thus Reducing Cost of Building—Houses May Be Built in Groups or Detached



Houses designed by Federal Housing and Town Planning Commission, Ottawa

The accompanying illustration shows a number of five room houses. In the types C.1 and C.2 there are only two bedrooms provided. In C.3 the bathroom is located on the lower floor thus making room for an additional bedroom on the second floor.

Any one of these houses may be built as a single dwelling. The drawing shows, however, how effective the grouping of three houses together may be made. It will be noticed that the verandahs are kept well apart,

and are quite private.

The cost per house at 20 cents per cubic foot would be \$2,620; at 18 cents, \$2,370.

It is the intention of the Federal Housing and Town Planning Commission to confer with the different manufacturers throughout the country, regarding the standardization of such parts as doors, windows, frames, etc. In this way it is hopeful that the utmost economy in construction will be secured.

Different Mouldings and Their Use

Eight Basic Forms—Combinations for Various Purposes—Relative Position
With Regard to the Eye—Proportions and Ornamentations

As casework pieces are usually the largest in the room they are quite prominent, no matter how simple they may be, and care must be taken not to make their presence obstructive by other ornamentation. The decoration used should be appropriate, sparingly applied, and of the highest quality of execution. Casework approaches nearer to architectural designing than any other furniture draughting. In nearly every article mouldings are used that are identical with those of architecture. They are combined in the same way and their use is for much the same purposes. There are eight forms from which nearly all others are derived by combination or variation and their names are of importance as serving a means for description.

The fillet is a narrow, flat surface, usually above or below another moulding, and it may be either a projecting or receding member. When below the surrounding surface it is a sunk fillet.

The "bead" is a small, half-round moulding either projecting from or even with the surrounding surface. In the latter case there is a narrow groove at one side, and it is called a quirked bead.

The "cavetto" is a hollow moulding, the outline of which does not exceed a quarter circle; and the "ovolo" is the reverse of the cavetto; that is, a projecting member of which the outline is a segment not exceeding a quarter. The cavetto and ovolo are not always circular in outline. Any curve may be employed, but the circular or elliptical forms are most common.

The "cyma recta," or "ogee," has a profile composed of two arcs, hollow and convex, like a wave, the hollow at the top. The crown member of cornices is often made with this moulding.

The "cyma reversa," at its name indicates, is the reverse of the ogee, the convex curve is at the top and the concave below.

The "scotia" is a concave moulding with the outline a segment of a circle often greater than a semi-circle. It is sometimes called a thumb moulding, and the hollow section is then composed of two tangent arcs of different radii.

A "torus" is a large convex moulding usually with a semi-circular profile. When any of these mouldings are used beneath a horizontal surface forming an angle with a vertical one it is called a bed mould.

Mouldings Produce a Series of Lines

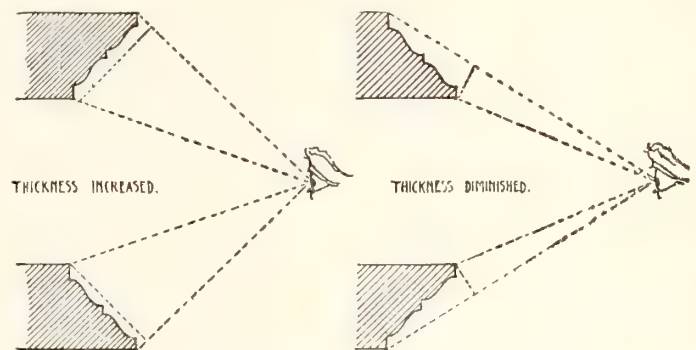
Mouldings used to hold panels in place are sometimes partly above the surrounding rails. They are then called raised mouldings to distinguish them from flush mouldings which are level with the rail. Mouldings serve various practical purposes but their aesthetic effect is to be thought of. They produce much the

same result, when used as a frame, that a line border does about a drawing. The effect of light and shade on a moulding is to produce a series of lines that vary indefinitely, according to the proportions of the moulding and its parts. A deep undercut moulding gives a heavy dark shadow, a black line, and a narrow flat moulding a light shadow, a fine line.

The position of the moulding in relation to the eye may also apparently increase or diminish its members. If it is placed above or below the eye so the moulding ascends or descends, respectively, and recedes from the eye the member will diminish in size, appearing thinner than it is. On the other hand, if the moulding descends or ascends respectively the member will appear thicker than it really is.

Carved to Preserve General Form

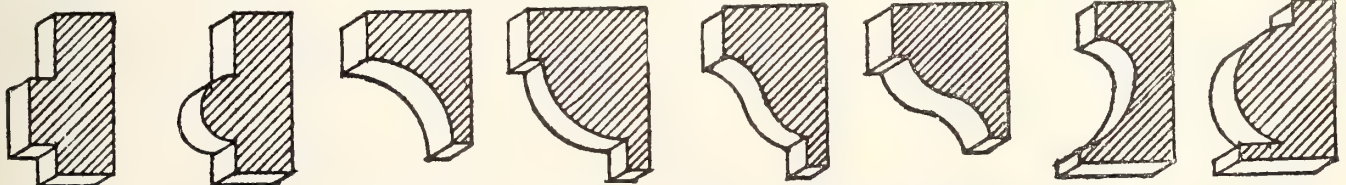
When a moulded member is composed of two or more of the simple forms described above, it owes its



Position affects appearance of moulding

charm somewhat to the introduction of a fillet which separates each moulding from that adjoining. An important combination of mouldings is their use in the crown members of cabinets. We have already called attention to having this proportioned to the size of the body below; in addition, it should not project too much. If its overhang is not greater than its depth it will usually look well, but in many instances it will be found desirable to keep somewhat within this limit.

Mouldings may be ornamented by carving and when so treated care must be taken to preserve their general form. It is usual on architectural members to employ the profile of the moulding as the leading line of the ornaments upon it. Thus, the fillet may be decorated by vertical lines as flutes, fret, or dentils; the bead, by "pearls," bead and spindle; the torus by the guilloche; the ovolo, by an egg and dart; and the cymas, by the heart ornament etc,



FILLET.

BEAD.

CAVETTO.

OVOLO.

CYMA RECTA AND REVERSA.

SCOTIA.

TORUS.

Wooden Beds for Discriminating Buyers

A Number of Pleasing Designs for Beds in Walnut, Oak, Mahogany and Red Gum

By W. J. and H. B. Beattie

The wooden bed is gradually coming into its own again, as the demand for these beds is slowly, but steadily increasing. One reason for this return to favor is that the bed of to-day is well proportioned and designed along very attractive lines. When made of one of the fancy woods, such as walnut, mahogany, oak or red gum, and finished to match the rest of the furniture, it adds tone and distinction to any bedroom.

The accompanying drawings show a number of attractive beds. These designs can be adopted as they stand, or they may contain suggestions that may be used to improve existing lines of wooden beds.

A William and Mary Bed

The first illustration is of a factory adaptation of the favorite William and Mary style. The posts are turned top and bottom. The top rail of the head end has light scrolls planted on it. These are put in place before the bandsawing is done. A light half-oval plain bead strip is run along the lower edge of the top rail.

The panel of the head is made in two parts and turned spindles are placed in the centre opening. Light carvings are used on the sawn ends of the panels and these carvings must necessarily be planted before the panel ends are sawn to shape.

The top rail of the foot piece is made 1¼ in. thick, the top edge being rounded. To simplify the manufacture of this bed the sawn panels and turnings are the same as the head.

This bed would look very well in walnut or figured gum.

A plainer bed is shown in the second illustration. The tops and bottoms of the posts are turned. The crown ornament on the head end carries two light scrolls, these may be dispensed with altogether. The wide stile that carries the carving may be left square or it may be bandsawn the shape of the outer edge of the carvings.

The narrow stiles are equally spaced; that is, the space between them is equal to the width of the face of the stile.

Straight, rounded beads, to relieve the edges, will make it more attractive. Plain oak, finished in fumed or Belgian grey, would bring out the various lines.

A Plain but Attractive Bed

The third illustration shows a bed worked out along plain and simple lines. The opening in the centre of the panels is for turnings.

The top edge of both head and foot is filled flush with the posts. The edges are slightly rounded, except on the corners, where the carving is shown. The carvings on that part may be left off and the corners would then be moulded to conform with the surface of the posts and filling. All ornamentation must be of a light and delicate character.

Walnut or figured red gum would probably be the most suitable wood for this design.

The fourth illustration shows a bed with the top rail of the head and the whole of the foot made of built-up stock. The grain of the face veneer runs perpendicular. The top edge of the foot-end would have

a strip of suitable material so as to show a clear face for finishing.

All overlays and carvings to be light and well done. The posts are blocked for sawn feet.

This design would look well in walnut, mahogany or fine grained quartered oak.

The last drawing is sufficiently different from the others to merit a second look. The two rows of spindles are the same for the head and foot. The ends of the posts are shaped off on a square taper. The coves on the posts are bored out on the upright boring machine. A cap is placed between posts on the foot end. The carvings and overlays should be light and carefully executed.

Plain oak is a very suitable wood for this style of bed.

All beds are to be made for a 4'-6" slat, and the siderails should be 75" long.

Quarter-Sawn Oak Chair Posts at Plain-Sawn Prices

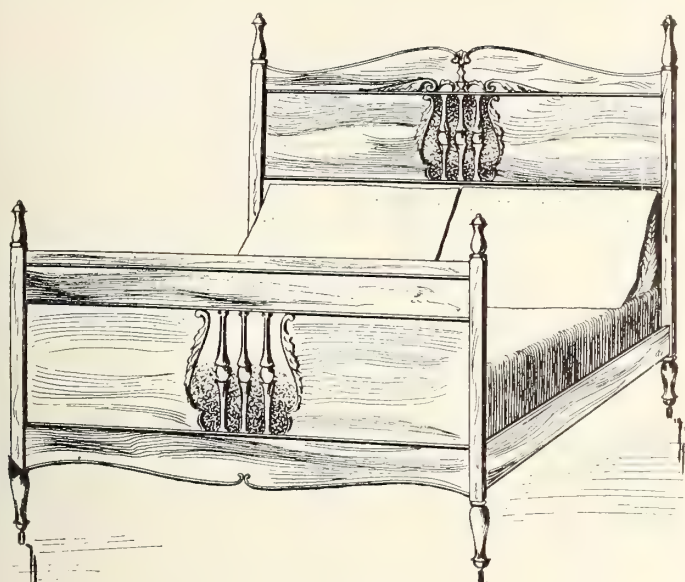
By proper handling at the rip saw, a plain-sawn oak board can be cut so as to yield a slight amount of true quarter-sawn and a large amount of semi-quarter-sawn material. All of this material is suitable for bending; in fact, tests by the Forest Products Laboratory, Madison, Wis., in co-operation with a large chair manufacturer, have shown that the semi-quarter-sawn stock can be bent in the hot-plate bender with less surface checking than either the true quarter-sawn or the plain-sawn stock. This is of particular significance to the chair manufacturer, for it means that the purchase of 2-inch quarter-sawn oak plank for chair-post stock is unnecessary.

A common type of back post is 1 inch by 2 inches in cross section, with the quarter-sawn surfaces appearing in the front and back, or narrow faces. Considerable saving may be effected by the selection of as much true and partly quarter-sawn back-post stock as possible from a 1-inch plain-sawn oak board. The flat grained portion of the board may then be used for other chair parts where the flaked surfaces are not essential.

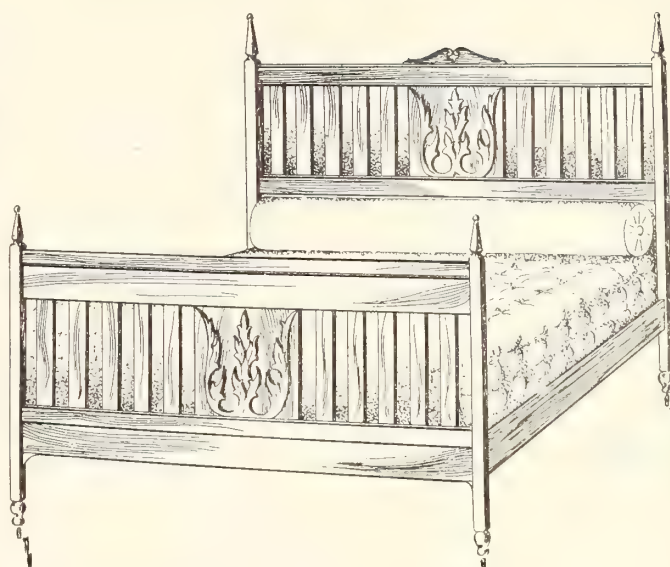
When the chair part to be bent is square, as is frequently the case, it is obviously unnecessary to purchase any quarter-sawn material at all. An entire plain-sawn board can be worked up into quarter-sawn parts.

Exhibition Opens at Toronto August 23rd

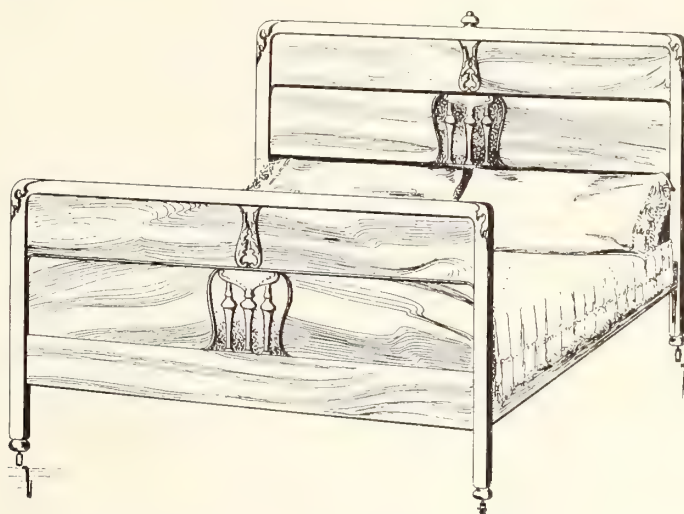
The officials of the Canadian National Exhibition, which is held yearly at Toronto, are sending out a handsomely illustrated wall poster dealing with this year's fair or Canada's victory celebration as they aptly describe it. The Exhibition, which is to be opened by His Royal Highness the Prince of Wales, will run from August 23 to September 6, both dates inclusive. Among the big attractions are the Grenadier Guards Band, Surrendered German U-Boat, Canada's Official War Trophies, Canadian War Memorial Paintings and the usual attractions such as exhibits of agricultural and manufacturing products, machinery, live stock, Government exhibits and other features.



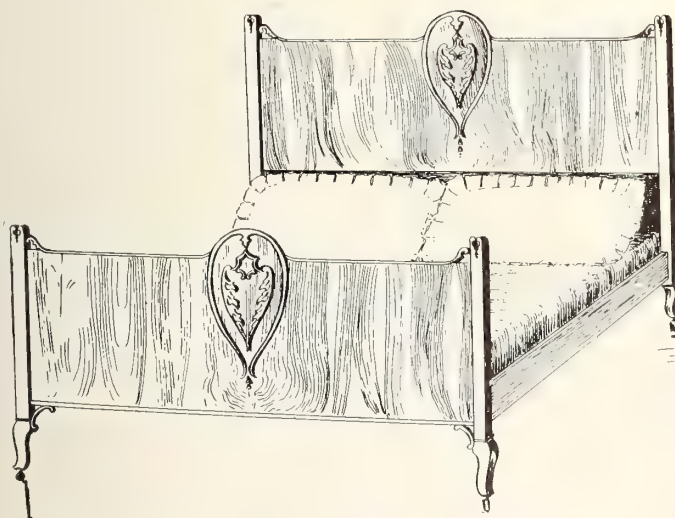
Adaptation of William and Mary style



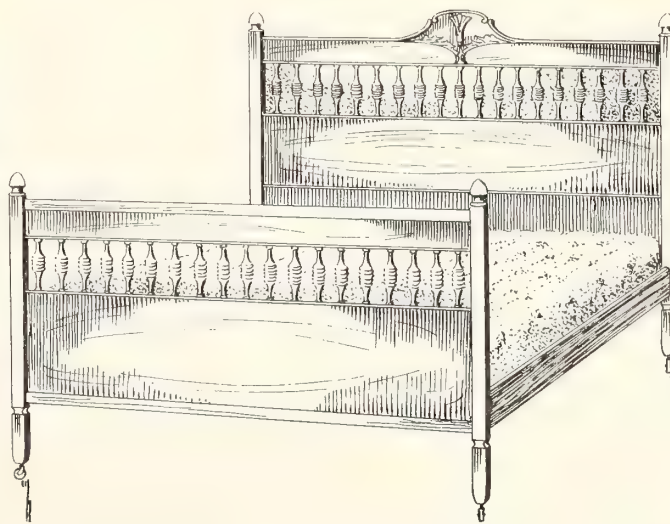
Bed designed along plain lines



Simplicity and attractiveness combined



Veneered bed for walnut, mahogany or quartered oak



A bed that will add dignity to a room

How Do You Dispose of Your Waste Material?

Plants That Are Electrically Equipped Face Knotty Problem—Profitable or Economical Disposal of Sawdust and Shavings Depends Almost Entirely on Local Market

Many of our modern sawmills and factories have adopted the electric drive. A considerable number of these electrically equipped plants generate their own power and to such the problem of disposing of the waste sawdust and shavings solves itself. Those who are not so fortunate, who are forced to purchase their current from outside sources, find that in spite of all they can do this waste material accumulates from day to day and becomes a veritable nuisance, as well as adding to the fire risk.

The production of alcohol from sawdust or shavings can be accomplished by either hydrolysis or destructive distillation. After examining these two processes one is forced to the conclusion that owing to the high initial cost of equipment and the large scale on which the operations would have to be conducted, to be carried on profitably, this method of converting waste material cannot be considered by the small woodworker or even a group of factories.

Another possible outlet for this material might be to convert it into charcoal. This could be carried out on a much smaller scale and at much less expense than the production of alcohol. We have never heard of this method being tried and do not know whether it could be carried on profitably, or where a market could be found for the charcoal produced.

Local Market Must be Found

In practically all towns a limited market exists for sawdust and shavings. It has been demonstrated that they can be disposed of much more readily if they are kept separate from each other. The shavings can be used for bedding in stables, for packing crockery and other breakable commodities, and to a certain extent by gardeners and farmers for mulching around vines and shrubbery.

Again many firms have found it profitable to bale the shavings and in this way they can be shipped to a considerable distance. This offers an enlarged market. A few enquiries and perhaps a little judicious advertising might find a buyer who would take all the shavings that your plant produces at a price that would more than pay for the labor involved.

The owner of a plant in Vancouver, B.C., sold all his shavings to a firm of fish curers and smokers. They paid at the rate of 5c per bag for this material and did the filling of the bags, and the hauling, themselves. This is offered merely as an example, many opportunities of a like nature undoubtedly exist.

Sawdust Put to Many Uses

Sawdust has been put to a wide variety of uses, some of them, unfortunately, of very limited application. Its successful utilization depends largely upon the local market that may be found, as it is not a material that can be economically shipped to any distance.

As a suggestion, some of the uses to which sawdust has been put are as follows: Fuel in furnaces and stoves; fuel in gas producers; briquettes; fire lighters; fur dressing; meat smoking, absorbent on floors, in cuspidors, etc.; fire extinguishers; cleaning

and drying agent for metals, machinery, etc.; bedding in stables; composition flooring, artificial wood, etc.; ethyl alcohol; distillation and extraction; hardening and annealing of metals; packing of all kinds, bottles, canned goods, etc.; heat insulation in cars, ice houses, etc.; sound deadening in floors, etc.; shipment of meats, shipments of grapes and other fruit; manufacture of soaps, manufacture of fertilizers; packing of ice cements, mortars and plasters; burning clay products; manufacture of wood flour; purification of gas; composition paving blocks; floor-sweeping compounds; manufacturing of oxalic acid; manufacture of carborundum and calcium carbide; protection of fresh concrete from too rapid drying; manufacture of illuminating gas; manufacture of wood meal fodder; manufacture of oatmeal wall papers; manufacture of velvet wall papers; lettering on floral emblems; manufacture of dyes; railroad signal rockets; medicinal purposes; stuffing pin cushions and dolls; manufacture of fireworks; circus rings; dressing wounds; moth preventive; coloring black clay pipes; drying ink; waterproofing mixtures; currying animals; tanning extracts; filtering medium. ✕

Blower Exhaust System Lessens Handling

A large number of woodworking plants are equipped with blower exhaust systems that take the shavings and sawdust from the machines and deposit them in fire-proof vaults, usually at a distance from the factory. By having a separate vault for sawdust and one for shavings and having them elevated above the ground a suitable wagon can be driven under these vaults and loaded through a chute with a minimum of labor.

How One Manufacturer Solved the Problem

An Ontario manufacturer, who uses electric power, when asked how he disposed of his waste material, replied: The shavings we bale and dispose of wherever we can. Sometimes we find it necessary to advertise them.

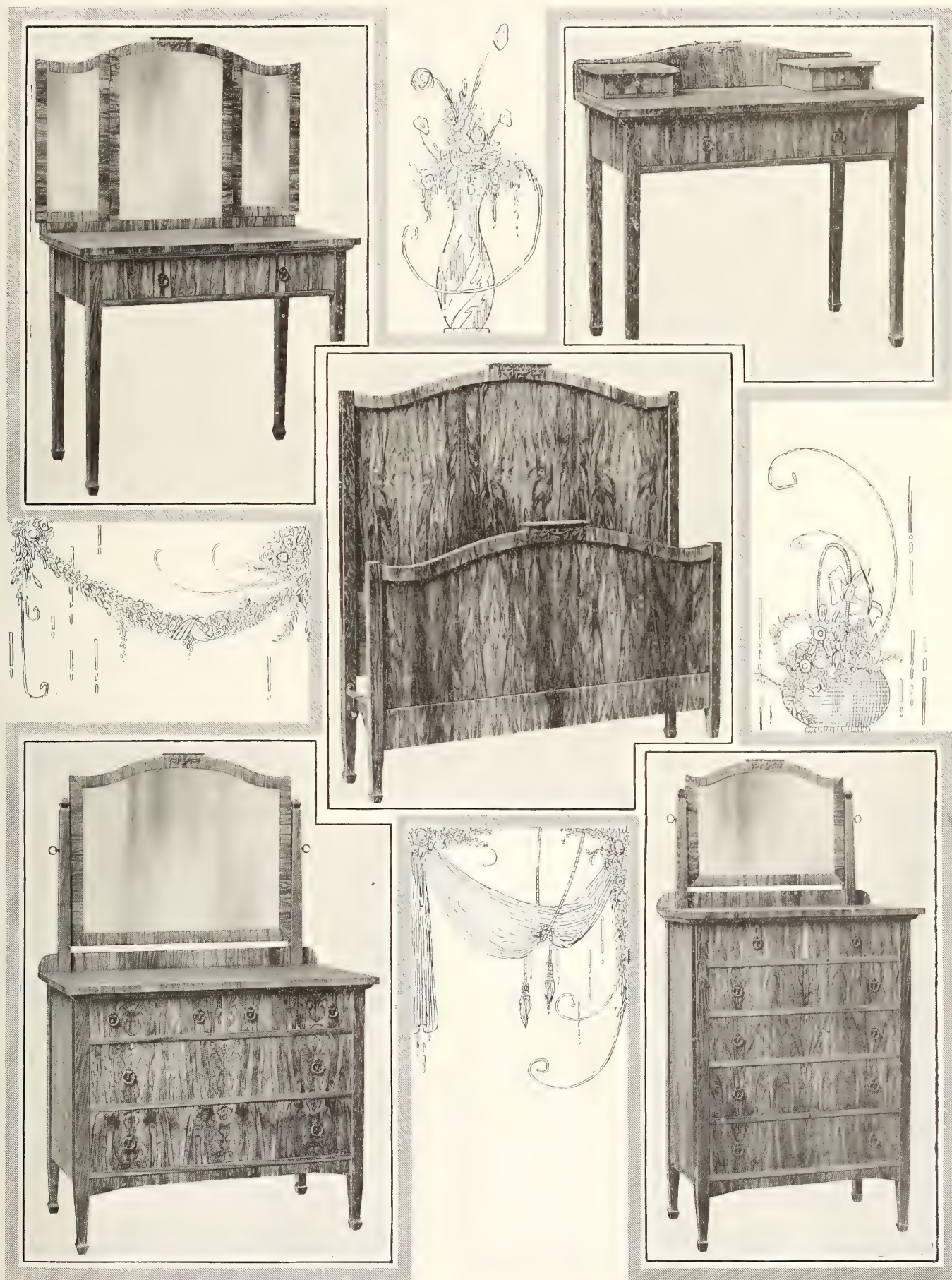
We have a cutsomer for all our sawdust. This we keep separate from the shavings by individual fans on rip and resaw, and blow it into a large bin overhead, so that it can be drawn off in sacks to haul to the customer. We find that small fans, driven from the counter shaft of the saws, work very satisfactory, and have well paid for their cost and installation and consume very little power.

The cuttings we sell for kindling wood. This is the best way we know of for disposing of planing mill waste.

An Opportunity for Co-operation

In many centres where there are a number of factories using electric power it might be a good idea for them to get together and find some method of disposing of their waste collectively and at a profit. Through co-operation a market might be found or a method devised that would convert all waste material into a profit instead of losing it as at present.

If anyone, who has any suggestions to offer along this line, will communicate with the publishers of this journal their co-operation will be appreciated.



Bedroom suite showing beautiful grain of figured red gum

Canadian Laboratories Doing Important Work

Comprehensive Study of Canadian Woods—Strength and Fibre Dimensions Test
Made—Work to be Resumed on More Extensive Scale

The Forest Products Laboratories of Canada organized under the Dominion Forestry Branch have just completed their fifth year in temporary quarters in the old residence building at 700 University Street, Montreal. It was originally intended that the Laboratories should move in 1918 to a permanent building designed to suit the needs of their specialized activities, and of sufficient size to accommodate an adequate investigative staff, but the government has found it out of the question to provide such a building during the period of the war.

The present laboratory buildings, if not now actually in a dangerous condition, is at any rate rapidly approaching it. The Laboratories moreover have outgrown their quarters and certain of their activities are circumscribed and others inhibited altogether for want of space in which to expand. The crying need at present is for a new building.

Notwithstanding, however, the handicap of inadequate quarters, and the further disadvantage of a greatly depleted staff, as the result of calls for men for military service in the great war, a good deal has been accomplished during the past year.

Strength tests on the pines and spruces of Eastern Canada were completed. The results of these tests for green material are available in the form of blue-printed tables; similar results for air-dried timber are being compiled. Forestry Branch Bulletin No. 60, "Canadian Douglas Fir" recently issued, contains complete strength data for this western species, together with an illustrated description of the methods of making the tests.

Strength tests were made, at the request of the Militia Department, to determine the properties of a number of British Guiana woods, which had been suggested as possible substitutes for walnut for gun stocks. A short investigation of the mechanical properties of fibre board and vulcanized fibre was also carried out, in co-operation with the pulp and paper laboratory.

At the suggestion of Mr. R. D. Craig of the Imperial Ministry of Munitions, steps were taken towards the establishment of a timber-testing laboratory in British Columbia for investigative work on aeroplane timbers. Arrangements were finally made for such a laboratory on the basis of co-operation between the Dominion Forestry Branch, the Imperial Ministry of Munitions and the Provincial Government of British Columbia through the University of British Columbia. The war came to an abrupt termination before this laboratory was well under way, and the Imperial Ministry of Munitions, its work in British Columbia on aeroplane timbers completed, has severed its connection with the project. However, the Vancouver laboratory is continuing work and is expected to be a permanent testing station of the Forest Products Laboratories at the University of British Columbia. If given the support of the lumber interests of the province this Laboratory will undoubtedly be able to do work of great value to the industry. At present a comprehensive series of tests on Sitka spruce are in progress under the direction of Mr. L. L. Brown, formerly of the staff of the parent laboratory in Montreal.

Experimental work on the preservative treatment of hemlock and jack pine cross ties has been completed. It has been found possible to creosote heart hemlock—an unusually refractory material—very satisfactorily, after first incising by a simple mechanical method developed in the laboratory. By the same method species naturally easily penetrable can be treated in a much shorter time and with less preservative than is ordinarily required. A description and discussion of this work has been prepared, which will appear shortly as Forestry Branch Bulletin 67 "Creosote Treatment of Jack Pine and Eastern Hemlock Cross Ties."

Studies of the fibre dimensions of Canadian woods were continued. Data of this kind, besides being of considerable scientific interest, are of very practical value in the pulp and paper industry.

The preparation of a complete reference collection of microscopic slides of all Canadian woods have been begun at the Laboratories. A great many such slides were already available but certain species were lacking. When this set is complete it should be valuable as a basis for comparative studies of the microscopic anatomy and structure of our woods, and their identification.

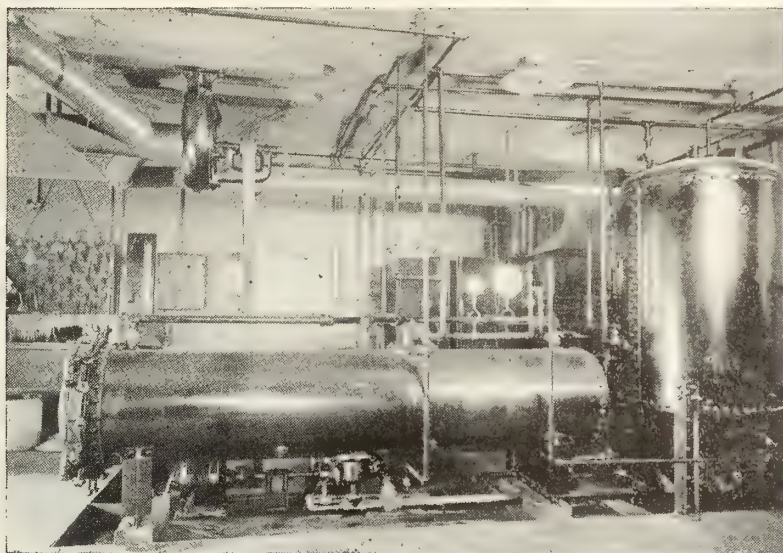
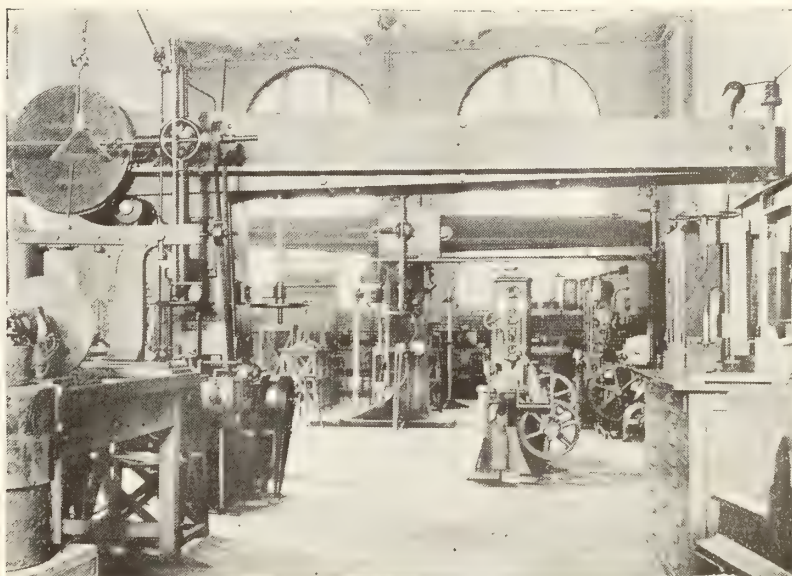
An instructive permanent exhibit of forest products has been developed at the Laboratories, where it is open to the public free of charge every day from 9 a.m. til 5 p.m. This is being added to and improved from time to time as suitable material is acquired. At present it includes exhibits of hard and softwood distillation products; timber specimens, showing bark and wood characteristics; models illustrating methods of making strength tests; normal characteristics of wood, and defects in lumber; wood-destroying fungi, insects, and marine organisms; mechanical and chemical wood pulps and their products; and other miscellaneous products and derivatives from trees. The many new uses of wood products have aroused much interest.

A smaller permanent exhibit has been prepared in co-operation with the Canadian Pacific Railway, which is now on view in the Windsor Street station, and temporary exhibits are prepared from time to time for special occasions, for example, an exhibit which is on its way to the Lyons Fair at Lyons, France.

Another activity of this branch of the Laboratories' work is the preparation of sets of authentic specimens of Canadian woods. These are intended for distribution to manual training and technical schools and other similar institutions.

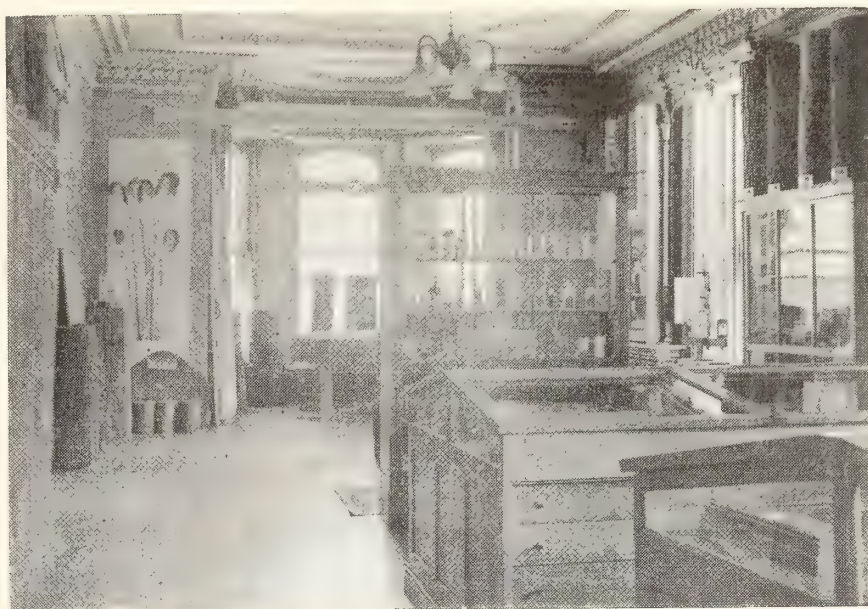
Now that the war is over, and members of the staff of the Laboratories, who have been away in their country's service on military duty, are returning from overseas, it is hoped that it will be possible to resume investigative work on a much more extensive scale than ever before. That scientific research is essential to a growing industry is one of the lessons learned during the recent conflict, and the lumber and other wood-using industries are no exception to this rule. It is a certainty that the savings resulting from industrial research will represent an amount the interest on which will repay the laboratory expenses many times over.

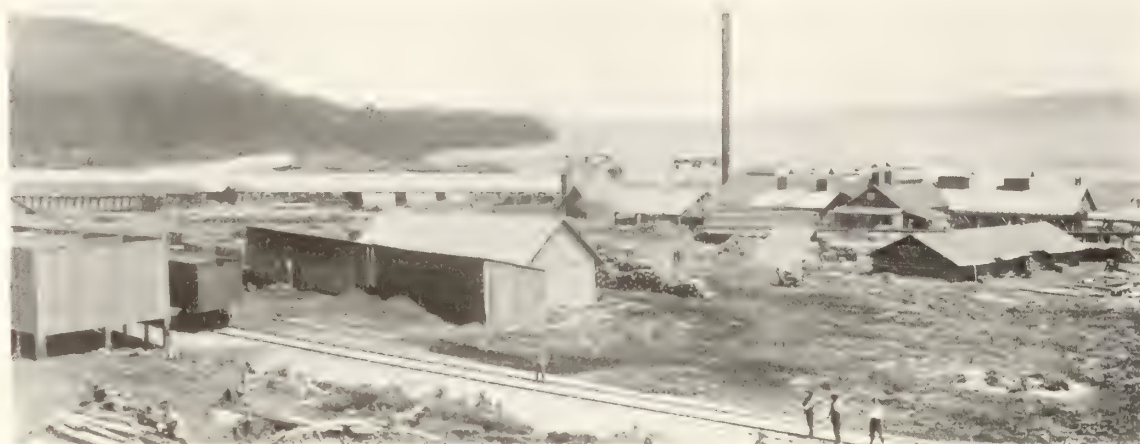
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Equipment used in tests at
Montreal laboratory
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Wood preserving plant,
Forest Products Laboratory,
Montreal
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Interesting Exhibit,
Forest Products Laboratory,
Montreal
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Chatham plant of the Sutherland, Innis Co., Limited

Activity of the Canadian Cooperage Industry

Very Old Industry—Methods of Working Stock—High Freight Rates Curtail Shipments—Will Eventually Export Large Quantities

The barrel is an extremely old form of container. Certain old Chinese manuscripts, written 2000 B.C., contain a description of it. In addition, the manufacture of cooperage stock is one of our oldest industries, as it is claimed that stave and heading were manufactured and shipped to France before the time of the British occupation. One of the large Canadian firms dealing in this time-proven commodity is the Sutherland, Innis Co., Limited, Chatham, Ont., with offices at New York, Carthage, Ohio, and Liverpool, Eng. This firm has plants both in Canada and the United States. The slack cooperage stock for sugar, flour, apples and other dry materials is made at both plants, while the tight barrel stock for wines, oils and other liquids is all manufactured below the line.

A large variety of woods are used, which for slack stock, include elm, birch, maple, gum, hackberry, basswood and ash. Basswood, gum, cottonwood and other hardwoods are used for heading. For the hoops elm is the lumber chosen. Nail kegs are made both from pine and hardwoods. The material required for tight barrel stock consists of white oak, red oak, white ash and gum, for both staves and heading, while the hoops are either iron or hickory.

Export Business at a Standstill

At the present time, exports of cooperage stock from Canada are almost nil. With railway rates to the seaboard so high and ocean rates four to five times what they were before the war, Norway and Sweden are doing the business. Formerly 8,000,000 to 10,000,000 slack barrel staves, with heading to match, were shipped, annually, to Great Britain, whereas today only an odd car is being forwarded, although the demand is very heavy. No doubt when things adjust themselves, the export business will be resumed.

Converting Timber Into Staves

The raw material for the manufacture of slack cooperage stock is delivered to the mills in the form of logs or bolts, what are known as staves and heading bolts. These are sections of trees, sawn the proper

length and either in the round or, where of large diameter, split to convenient sizes for handling.

When the logs arrive at the mill, they are bolted to the proper length, either with a swing circular saw or draw saw, they are then split on the bolting saw, into quarter cut bolts, 4' to 6' wide. The bolts are then placed in steam boxes, and steamed at least twelve hours. This softens the wood and conditions it so that it will cut easily. After being taken out of the steam boxes the bolts are barked and go to the equalizing saws, which consists of two cross-cut circular saws, running on the same mandrel, so as to make all bolts exactly the same length. After being equalized the bolts are cut into staves, on a knife having a 20 in circle and cutting 160 staves per minute, and are then piled in sheds for drying. When the staves are thoroughly seasoned, four to six weeks, according to the weather, they are jointed on foot jointers to the bilge desired by the cooper. The bilge being of a suitable curve for the diameter of the barrel to be made.

150 Hoops Per Minute.

For hoops the logs are sawn into plank 1½ in. thick, the planks are then boiled for 8 to 12 hours, and cut into beveled strips 5/16" x 3/16" x 13/8". The cutting is done on a knife cutting 140 to 150 strips per minute. These strips are planed on the edges, pointed at one end and thinned at the other on an automatic pointer and lapper, after which they are boiled and coiled in coils of 10 hoops each, while hot. When dry they are ready to nail on the barrel.

The logs for heading are made into bolts by the same process as used for staves or bolts cut in the woods are used.

The bolts are sawn, on a swing saw, into boards half an inch thick, then seasoned either in the open for a time, or piled direct in the kiln. All boards have to be thoroughly kiln-dried, before being manufactured into heading. When thoroughly dry the boards are planed on one side, the edges jointed, the boards

matched to the width of heading required, and are turned round on a heading turner. Modern turners will turn from 2,500 to 5,000 sets of heading per day, depending on the diameter, and will make the heading with beveled edge, ready for the croze in the barrel, or a plain edge, the same as used in cheese boxes. The heading is packed in bundles, pressed in a heavy press and wired, after which it is ready to ship to the consumer.

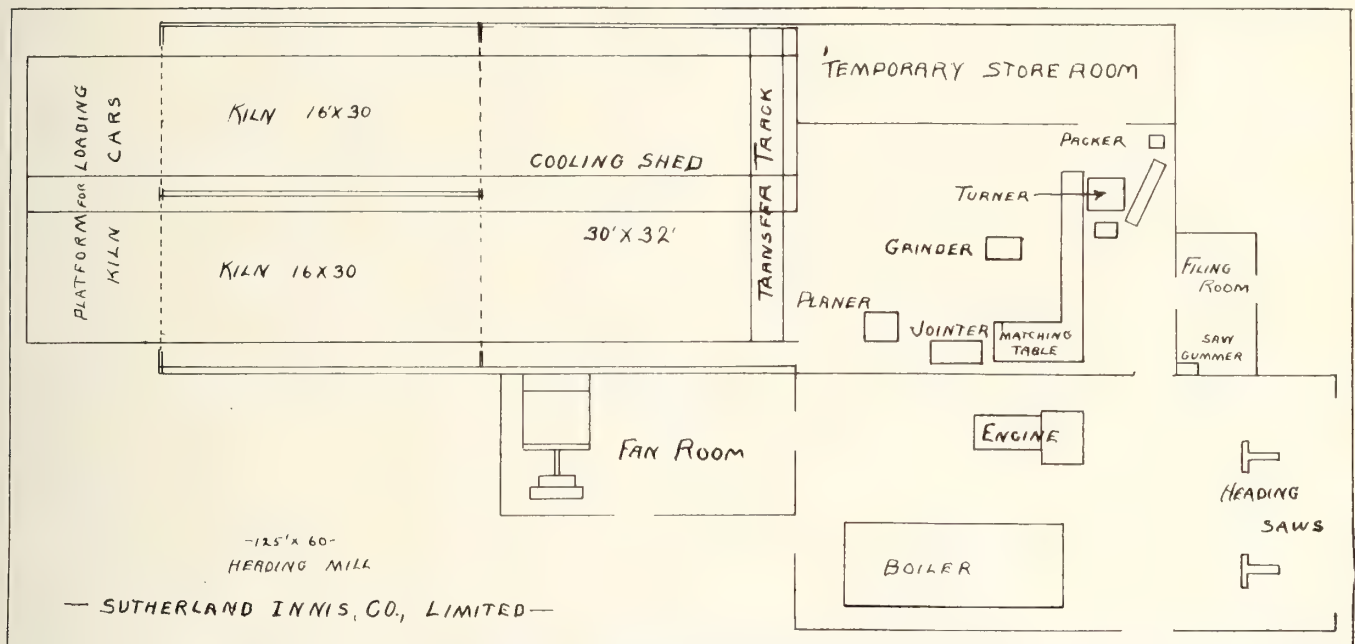
Working the Tight Barrel Stock

Tight barrel staves are either split out of the bolts, with a froe, being made on the quarter, and then dressed to circle or flat, on a buckers or sawn on a drum saw. A buckers consists of two knives, between which the staves are forced by steam power, while a

drum saw is a cylindrical saw, shaped like a drum, which saws the staves on a circle.

The staves are then jointed, sometimes kiln-dried, and finished into barrels by the cooper or machine shop. Tight barrel heading is made the same as slack barrel heading, but doweled and flagged so as to be liquid proof. In this country steel hoops are used on tight barrels. In Europe, half round hickory, oak or chestnut hoops are used to a large extent.

Canada has large tracts of timber suitable for cooperage stock. Where these tracts are situated within easy supply of water transportation they will be the source of supply for years to come, long after the cheap timber on water routes in the U. S. A. are exhausted, and Canada will again become a large exporter of cooperage stock.



Floor plan of heading mill at Chatham, Ont.

Why Not Co-operation with Technical Schools?

Courses Designed to Give General Training and Good Foundation—Co-operation Should Open Way for for Classes to Spend Part Time Working in Factories

By G. E. C.

Last month we examined the present system of teaching woodworking with the idea of finding out how it can be improved.

It has been suggested that, in order to obtain satisfactory results, the practice of making small fancy articles by hand should be discontinued, and commercial articles manufactured in their place, the class being run on the lines of an up-to-date factory. I do not suppose the advocates of this method propose that articles should be manufactured and sold in competition with the factories but presume they mean school supplies should be made. Most schools are already doing something in this direction, as shown by the partial list given last month, but their method of handling the work is no doubt, in many cases, unorthodox.

Regarding the articles made by the boys for themselves to which objection is taken, it must be borne in mind:

(a) The boys are learning how to make the var-

ious joints, to clean up, and finish work; and if they do this by hand they will learn by experience the difficulties, and the necessity of carefulness and accuracy.

(b) If the article is carefully selected the problems involved in its construction will teach the necessary lessons.

(c) The boys being required to pay for the material used, exercise more care than they would do otherwise, but it is only fair to them that they should be allowed to make something that they feel is worth taking home.

Applying Factory Methods to School

Passing aside for the present the question "What is meant by up-to-date factory methods?" let us see how factory methods of any description would work out in a class of boys.

We will assume that we have a class desirous of learning to work in a factory, and have an order for

a number of filing cases for one of the commercial classes. First a drawing has to be made, and stock bill prepared. This can be taken as an exercise by the whole class, but when it comes to cutting up the material, and dressing it, we have an altogether different proposition. In a factory, of course, one man does one process, and the material is passed to another man and another machine. Here we have a class of boys. If the instructor selects one boy to do the cutting off, and another the ripping, it may be possible for him to correct any mistakes and show them how to handle the material properly and speedily, but it would keep him busy; and in the meantime what about the other boys? They cannot all work on the saws at once and if each does a little nobody gets any real practice. If one of the other boys is put to work on the jointer, another on the surfacer, one on the shaper, and another on the trim saw, that is only six and still leaves a lot doing nothing, unless it is putting their Boy Scout training to practical use in bandaging the hand of one of the boys who has managed to get cut, for no matter how wideawake an instructor may be he cannot be everywhere at once, and even experienced men get cut sometimes.

A Dangerous Practice to Follow

There is hardly an employer in Canada who would dare to set a young lad to work on a dangerous machine in his factory without having an experienced man watch him carefully for some time. Nobody could watch six boys on different machines at the same time. Another question is who would be held responsible in the event of an accident?

It does not help any to say "Let the other boys be working at the benches on something else". If they are there they need supervision and we have already seen that the instructor has his hands full. We can hardly say that six boys should constitute a full class, yet can an instructor look after even six under these conditions? It would be different if the boys were in any way experienced but as soon as one becomes at all efficient on a machine he must be moved. It is necessary at times to insist that a boy continue working at a certain lesson until he has mastered it but it would be unfair to keep him at it after, if there are other things for him to learn. Not only that but in this case you would be keeping away another boy who ought to be learning.

Every boy is entitled to the same opportunities, consequently it is not fair to select some boys and insist that they become machine hands and work on certain machines. Yet how can you train every boy to operate every machine? If a boy is not capable of handling a certain machine how can you get him to turn out good work upon it? If he is capable why is he there? He ought to be learning something else.

In this sense the factory and the school are directly opposed. In the former the employee is placed where he is most efficient and therefore most productive. In the latter the pupil must be set at the work at which he is least efficient and therefore most in need of training. How can the two possibly be reconciled?

Wages Compensate for Monotony

We have also to consider monotony. In a factory a boy, or man, stays for weeks doing the same work day after day, because he is paid. It may be monotonous but he puts up with that as a matter of course,

and in time becomes expert. In school things are different, and by the second day he would want a change, and if he is not to be sickened of the work entirely must have one. How can you get factory system, or results, like that?

Another difficulty is "Who is going to pay for material spoilt or wasted?" Waste is a serious item and must be guarded against. In every factory the question arises constantly whether it is better to save labor, or material, and every boy would need close attention even if he is really trying to make good, otherwise he would be making mistakes. In factories with experienced workmen and foremen mistakes occur and materially is wasted. It is only reasonable to expect that with boys these would be much more numerous. Of course, this could be charged to "Fuel."

The question also arises what constitutes "up-to-date" factory methods. Go through three or four factories and compare their methods, there is quite a difference. Which are we to adopt? The best! Each manufacturer no doubt considers his the best method and probably it is for his case. A little difference in the variety of the product may make it economically essential to use equipment and methods in one factory that would be worse than useless in another.

We might perhaps, however, take it as a general rule that nothing should be done by hand labor that can be accomplished by machine, and that work should be divided into separate processes, each man being kept on on similar work day after day, so that by constant practice, and the elimination of unnecessary movements, he may attain a higher state of efficiency.

Neither of these are suitable for adoption in the schools. The former would mean an enormously increased cost for buildings and equipment and where would you stop?

Schools Have Broad Outlook

With regard to specialization, if our schools are to be used for the purpose of turning out men who can only glue up work, or clean it up, or wear out sand paper, like a lot of men in our factories today, the sooner they are closed the better. The money can be used to better advantage.

If a boy starts work in a factory he is used where he can be most useful. The firm are after what they can get out of him and if he is getting results in one place he is likely to stay there unless there is a possibility of his being more useful to them elsewhere. His own interests are scarcely considered. In many cases a boy doing well at a certain job has to stay there while the next boy not doing so well, gets moved around from place to place. After a few years the first is still at the same job and knows nothing else while the other has had opportunities of learning several phases of the work. If both have to look for a fresh job there is no question who is the better off. The first boy, (or man) is handicapped and placed at a disadvantage because he was the smarter boy.

To become a superintendent, or even a successful foreman, in a factory today, it is necessary to have a thorough knowledge of the various processes through which the material has to pass. It is practically impossible for even a clever boy to gain this knowledge in a factory unless he is a son, or protege of someone in authority, who will give him special opportunities and privileges.

We want all our boys to have an intelligent knowledge of wood-working in all its branches, so that they

may be versatile workers, and be in line for promotion to the top of the tree. They will encounter enough difficulties and obstacles without starting out handicapped.

Comparing Factory and School

Regarding factory methods in the schools we might perhaps sum the matter up, by saying, the object of the factory is to obtain the maximum of output from the knowledge and ability of the employee; and that of the school is for the student to obtain the maximum of knowledge and ability from his work.

The complaint is also made that our boys are not getting any training in veneering. It is not possible to teach this in a proper manner without the necessary equipment and it does not seem to me that the expense of installing the same would be justifiable. We must not overlook the fact that our classes are not for the purpose of making cabinet-makers only but include boys who are to become carpenters, stairbuilders, etc. Boys studying architectural drawing, also require a knowledge of framing, roofing, etc., to become efficient all these have to be catered to as much as, or being better paid probably more than, cabinet makers.

There can, however, be no question as to the necessity of all the boys being made conversant with the possibilities, methods of operating and dangers of modern machines, and the routine and labor saving methods in use in different factories, but I believe this can to a great extent be accomplished by lectures and demonstrations.

The Dominion government has decided to encourage and assist technical education. In a bill passed at the recent session provision is made to assist the different provinces, under agreements to be formulated, to the extent of \$10,000,000. It is expected that when the Premiers attend the National Industrial Conference at Ottawa, in September, definite plans will be decided on.

I do not want to suggest that the present classes are by any means perfect, though I cannot admit that they deserve all the adverse criticism to which they have been subjected.

How can they be made more useful?

Personally I believe the best results will be obtained by co-operation between the authorities and the C.M.A., the F.M.A. and all employees of labor, so that our boys may spend part of their time in the class room and part at the factory.

What do you suggest?

Ninety Per Cent. of Accidents Carelessness

By J. H.

Having been in and around machinery in furniture factories for the past thirty years and for the greater part of this time having done the first aid attention to the injured, I have come to the conclusion that 90 per cent. of all accidents are caused by carelessness or lack of foresight on the part of the employee. There are too many chances taken. Some think, see how near one can come to danger without getting hurt, while the better plan would be, see how far away one can keep from danger without interfering with the work at hand. I will just give a few instances of what I would consider carelessness on the part of the employee. Years ago I was working on a band saw in a certain factory, another man was working on a buzz planer near by. He was a new man on the job but was one of these fellows who know it all, he wore a pair of

gloves, as his hands were either soft or he did not wish to soil them. I saw the way he was working that there would be an accident, if he was not more careful. I went over to him and told him that I would advise him to take off the gloves, as he would get hurt. "Oh no," said he, "anyone can run this, there is no danger." I went back to my own work and in a little while he got the tips of his finger ends of the gloves cut off. I again warned him to take off the gloves, but he paid no attention to me. Half an hour later we were looking for four fingers of his right hand underneath the machine. He had fair warning.

Another time I was working on a double end cut off saw, which had a dado saw in on one end. I had been using the dado saw at the time, when one of the cabinet makers came down from upstairs, with a drawer bottom which he wanted cut off. He stood at the end of the machine by the dado saw, while I cut off the bottom on the other end and while standing there he got fooling with a man on another machine near by. He stuck his fingers and thumb to his nose towards the other man, when he brought his hand down on top of the dado saw and was minus three fingers, he knew the saw was there.

I recall another accident, a man was running the buzz planer which was his regular job. He was working away minding his own business, while he went to lay down a jointed piece on a truck in front of him, another man stepped up behind him with a small piece and started running it across the machine, the regular operator did not see him and could not hear him for the hum of the machine, when he stepped back his elbow poked the other fellow's arm and knocked the piece out of his hands, the result was he lost several fingers. The regular operator was not to blame.

Another accident, which might have been serious but was really laughable in the end. The belt running from the main shaft to the planer counter shaft was tearing at the lace. To throw it off it had to be thrown off on the tight pulley side, as there was a hanger on the other side of drive pulley. The planer man got a stick about four feet long and stood on the bed of the planer to be high enough. He threw the belt off but lost his balance and fell against the shaving hood, knocking it off the machine and while the cylinder was in motion he fell across the top of the machine, luck so happened that he did not get his hands into it. But somehow he fell across it back down, with the result that the knives caught the seat of his trousers and left his seat as bare as a bald head, and a bad pinch to his work, but for a few weeks he preferred to stand. Had he got a long stick and reached it from the floor it would not have happened.

Another accident occurred while a man was trying to put on a small belt with a stick from the floor. It was too much trouble for him to get the step ladder, the consequence was that the end of the stick caught on one of the spokes of the pulley and the other end of the stick broke a few of his ribs.

The slogan of "Safety First" cannot be used too much around a machine shop and would save many an accident if strictly adhered to.

Is your equipment really up-to-date, or do you just think it is, without knowing for sure? A good way to find the answer to this is by visiting others in the same line of work, and by listening to the offerings of machinery salesmen.

Trade News of the Box Industry

Opening for Box Shooks in Mexico

The British Consul General in Mexico City sends the following information regarding box shooks and barrel staves required in Mexico:

A letter received from a leading oil company says that their requirements for box shooks amount to nearly one million box shooks annually and other companies require equally large quantities. The timber is pine, but lately gumwood and cottonwood have been given preference because the wood is whiter and finer grained. It is imperative that the timber is well seasoned and dry, otherwise the shooks shrink and warp. They must be cut absolutely square and accurate to dimensions. The manager of this company suggests that boats carrying box shooks from Mexico to Canada might carry Mexican asphalt to Canada as return freight.

The secretary of the British Trade Board in the city of Mexico has furnished the following information regarding the importation into Mexico of box shooks and barrel staves:

"Box shooks are principally imported into Mexico from the states of Louisiana and Mississippi. According to the Government data available at the pre-war period of 1912-13., there were received from the United States 16,278 tons, valued at \$438,514 United States currency, since which time the following importations have been received from that country:—

1914—Value.	\$252,027	United States Currency.
1915—	192,199	" "
1916—	151,366	" "
1917—	206,300	" "
1918—	366,832	" "

"In consequence of the high freight from Canada in comparison with that of Louisiana, there has been very little imported from Canada in the past years, and until there is a direct steamship service between this country and Vancouver, we do not think that the Canadian product could be placed on the market to compete with that from the United States.

"There has been in the past and will in the future be probably a great quantity consumed by the different operating oil companies; as an instance one company imported in 1913, 5,809 tons of box shooks for their own consumption.

In previous years there were several lumber mills working in the Republic, the largest of which was the Madera Lumber Company, in the state of Chihuahua, but this in consequence of the rebel activity has been closed down for some years. Also there were other companies of minor importance, amongst which were the foreign lumber companies operating in the State of Michoacan, and producing considerable quantities of rough lumber as well as railroad ties, but these have also been closed down for some years; the only operating company of any size is that of the Suchi Lumber Company, belonging to El Oro Mining and Railway Company, in the State of Mexico, which is still producing commercial lumber.

"But none of the above companies could compete with the box shooks that were imported from the United States as above mentioned.

The names of the principal oil companies requiring box shooks may be secured from the publishers of this journal.

New Layout of the Wilson Box Plant

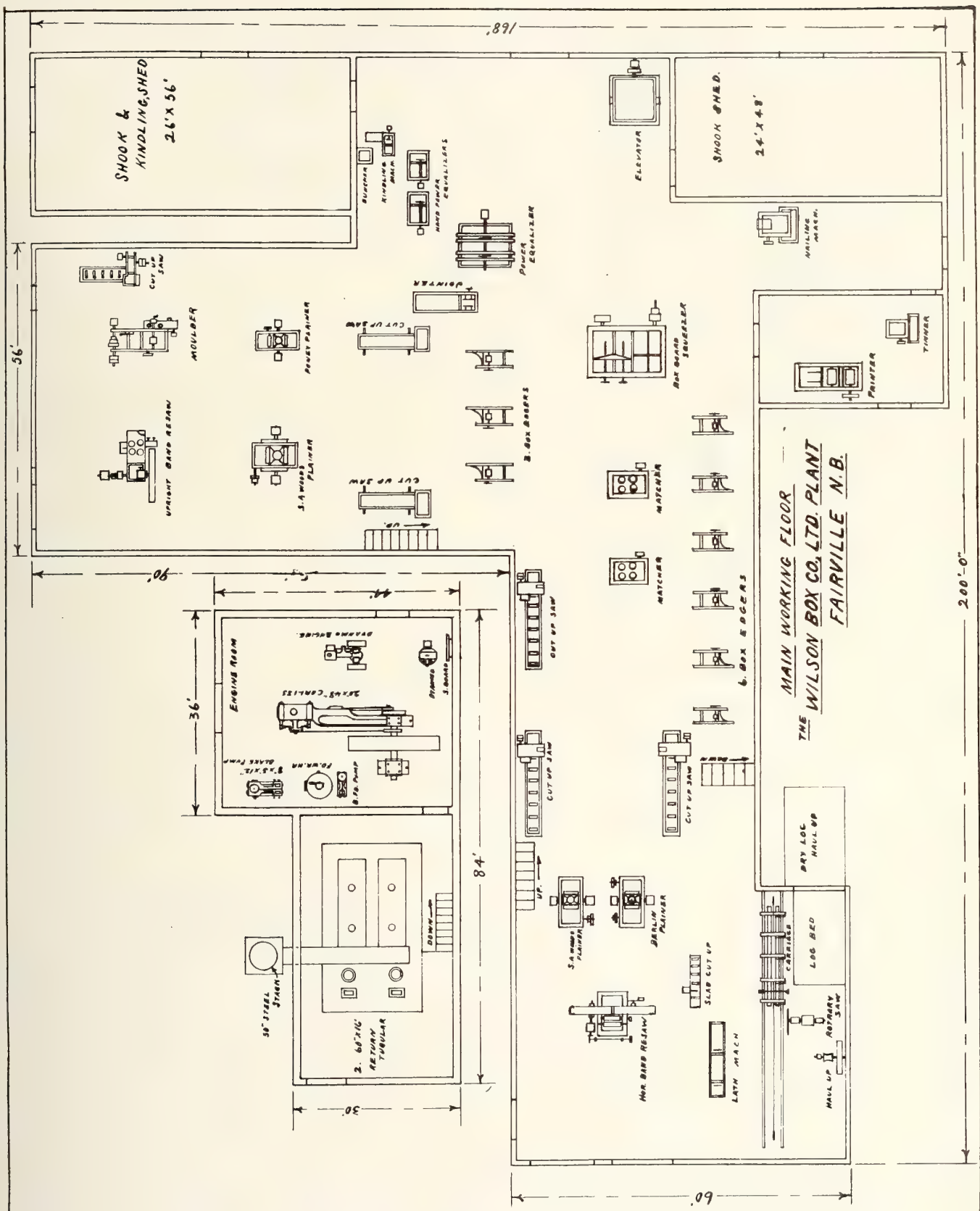
Output of Box Factory Increased 50 Per Cent—Anticipate a Large Export Business—Attitude of Labor All Important Factor

The Wilson Box Co., Limited, St. John, N.B., started out in a comparatively small way, in 1910, to cater to the nailed-up box trade of that city. Since then, under the able and energetic management of Mr. Alex. Wilson, the President and Managing Director, they have enlarged their sphere of action until they now own three saw mills, in addition to their large box shook plant, at Fairville, N.B., a suburb of St. John. The various plants, together with their lumber yards, cover an area of eight acres, with convenient siding accommodation. They have just completed an addition to their box factory which will increase their output 50 per cent. The lay-out of the working floor of this plant is shown in the accompanying sketch. The nailing and shipping departments are located on the upper floor.

The equipment of the box factory consists of two band resaws, 4 planers, 6 cut-off saws, 10 fitting saws, 3 tonguing and grooving machines, 1 squeezer, 3 equalizing saws, 1 printing press (2 colors), 1 corrugating machine, 1 shook tying machine, 1 rotary saw, 1 lath machine, 4 nailing machines, 1 kindling machine, 1 hand-hole machine, 1 boring machine.

In addition to supplying practically all the nailed-up boxes used in St. John City, they ship shooks all over the Maritime Provinces and do a considerable export trade with the British West Indies. While the war interfered with the export trade to Great Britain they now look forward to doing a large volume of overseas business when the regular steamer sailings begin from St. John in December next. They also anticipate doing some exporting to Mexico and the Argentine should proper steamer transportation facilities be established between Canada and these countries. The Wilson Box Co. are very favorably situated for a large export business.

The sawmills are situated at Westfield, St. George and Cambridge, N. B., from which points all lumber of box grade is railed to their box factory, the better grades of lumber going to the British and American markets. All waste is eliminated, as far as possible, even the edging being cut to a uniform length, bundled, and sold for building or firewood. Improvements to the plant and machinery are going on from time to time, as the management believe that in manufac-



Arrangement of equipment in Wilson box factory

turing devices it pays to keep up to the minute. The result is that their product is of the very best.

Mr. Wilson is optimistic with regard to Canada's future and believes that during the next few years we are going to see a great expansion of Canadian industry if "labor" can only be made to see—in their own interest as well as that of capital—that curtail-

ment of output is a mistaken theory and that increased output is what is needed to make this country prosperous.

If you do not find what you want to know in your trade journal, write and ask the editor. You will do him a favor and it will profit you.



Major James Brechin, Toronto
B. C. Lumber Commissioner for the East

Pacific Coast Forest Products at Big Fair

The Province of British Columbia will make an imposing and attractive display of forest products in the Canadian government building at the annual exhibition of the Canadian National Exhibition, Toronto, which will be held from August 25th to Sept. 6th. The space occupied will be 12 x 65 ft. and the booth will be representative in every respect of the forest wealth of British Columbia. There will be not only many photographic illustrations of the timber assets of that province, but also samples of B. C. flooring, ceiling, interior and exterior trim, panelings, cooperage, pulp products, etc. Not since 1916 has there been a display made by British Columbia at the big exposition and the space which will be occupied this time will be much larger and the character of the showing more extensive than ever.

Major James Brechin, now of Toronto, late of Victoria, who was recently appointed British Columbia Lumber Commissioner for the East, will have charge of the booth, and will be glad to welcome all those interested.

Question of Sun or Weather Checked Oak

A good deal has been said in the past in regard to fixing up weather checks in oak after it is finished. The material goes through the machine department and the fine checks get filled up with dust from the sanders and are not noticeable until the varnish gets on and disappears in these fine checks, naturally spoiling the whole surface. A good deal of this trouble can be overcome where it first starts—that is, in the lumber yard. It is the top layer of the lumber on a pile which is always subject to sun checks. This can be overcome by covering the pile. A pile which is not used for some time can be covered with cull lumber.

The piles which are continually being used are the ones that cause the trouble. To overcome this diffi-

culty, I have four canvas sheets which are oiled, each being large enough to cover a pile. When we load a kiln truck, we roll up the canvas to uncover the pile, and when through with the truck we recover it. This I find is the quickest way of covering a pile and keeping the lumber in good shape, since the sun cannot get at the top of the pile. The four sheets give us four different piles to work from.

Represents Saw Firm in Australia

James N. Mackin "started succeeding" when he entered the saw business as a young man scarcely out of his "teens." His happy, genial disposition was a valuable asset, and he eventually became an expert salesman. For twenty years he represented a Philadelphia house, during which time he travelled extensively throughout the world.

He acquired experience of great value, and became familiar with business conditions everywhere. But one of the greatest facts that he learned, because it was so repeatedly impressed upon him wherever he journeyed, was the unusual high quality and great popularity of Atkins Silver Steel Saws.

During the war he represented E. C. Atkins & Co., in Washington, D.C., and made hosts of friends both for himself and for the great firm for which he sold. His success here, due to his wonderful business ability coupled with a wealth of energy, vigor, and optimism, made him the logical man to care for the rapidly increasing business of the firm in the Far East.

Atkins Silver Steel Saws and Tools have enjoyed a steady growth in Australia amounting to over fifty per cent. in the last three years. The Atkins Company very wisely selected Mr. Mackin to represent them there, and he is now superintendent of the entire Australian Division. His headquarters are located at the E. C. Atkins & Co., Branch House, No. 5 Australasia Chambers, Martin Place, Sydney, N.S.W. Australia.



James W. Mackin, Australian representative
for E. C. Atkins Co., Indianapolis, Ind.

The Lumber Market

Domestic Woods

The local lumber situation is marked by a strong demand—a demand much in excess of supply. As expected, where situation occurs, prices are climbing upward and are very unstable. While stocks cannot be said to be extremely low or nearly exhausted yet they are low in comparison with the existing demand. The situation in Canada is not nearly so acute as that found across the line, but the same factors control and dominate the market. American buyers are purchasing large quantities of Canadian hardwoods, and the auto industry is taking all the heavy material that they can purchase. The demand for heavy hardwood stock is perhaps stronger than for any other one line. There is very little dry material available and the green stock is being bought up rapidly.

There appears to be a lot of building going on in all localities, thus creating a strong call for building and constructional material of all kinds. A considerable amount of N. B. building material has been marketed in Ontario.

The furniture trade is buying quantities of 4/4 and 5/4 hardwoods, chiefly birch, while the call for hardwood flooring is cleaning up the thin maple. In all lines the demand may be said to be strong. Probably the slowest item is crating material, and even a fair amount of that is moving.

The prices are steadily climbing. Many buyers are bidding against each other, and this has a very demoralizing effect on prices. In some instances dealers have been offered prices much higher than they were quoting; in fact, higher than they would dare ask. The result is that, in some cases, quotations are very hard to secure.

As long as the present demand lasts existing prices will continue, and many expect to see still further advances. It is the old question of demand and supply, with demand well in advance.

Imported Woods

The outstanding features of the American hardwood market are the continued upward trend of prices coupled with a further diminution of available stocks. It is estimated that for the month of July the lumber shipped in excess of production amounted to 10,000,000 ft. Obviously under such conditions manufacturers are unable to pile up a surplus or even fill the gaps in their shattered stocks. The weather conditions in the different lumbering centres have improved somewhat and the men in the woods are able to bring out a fair quantity of logs.

The increased log output is of very little advantage as in the Northern States there is a very serious car shortage and the same conditions exists in a lesser degree in the southern producing centres. As many concerns depend on the railroads to haul their logs from the woods to the mill the shortage of cars has had the effect of practically forcing these mills to close down. Others are able to operate spasmodically on the logs that come in from time to time. The grain movement will soon commence and the operators are doubtful if cars will be at all plentiful for some time. This shortage will tend to make shipment uncertain. There have

been strikes in some centres and a general unrest seems to pervade all manufacturing and wood operations. Work has been held up in some localities on this account, while on the whole the efficiency of the individual workman seems to have decreased. Many concerns have been forced to yield to the demand for shorter hours and are running 8 hours per day where they formerly ran 10. All these factors have an adverse effect on production and coupled with the unprecedented demand it appears as if it will be a long while before the situation becomes anything like normal. Some who have made a special study of the lumber outlook and are in a position to know, venture the opinion that it will be anywhere from a year and a half to two or even two and a half before stocks are accumulated and the business is placed on anything like a staple basis and that it will be all of five years before conditions will become what might be called normal. The present output is only about 70-75 per cent. of normal production.

Prices are very firm and show a slight upward tendency. However, quotations are not so erratic and prices may be said to be more stable now than they have been for some months. Many large lumber operators have become alarmed at the unchecked upward trend of prices that has been experienced lately and would like to see quotations stabilize. It is hard to see how this could be brought about and in any event there are a considerable number who would ignore the stable prices and sell for all they could realize. The buyers can, to a certain extent, thank themselves for the general advances that have taken place. In their eagerness for stock they have been bidding against each other with the result that prices climbed daily if not almost hourly. Price did not seem to be a deterrent feature and some manufacturers found that when they advanced prices to protect steadily diminishing stocks that the material went out just the same.

The demand has not diminished in the least, if anything it seems to be stronger. As long as this demand exists present prices are bound to hold. There does not seem to be any likelihood of prices receding for the next six months or even the next year.

Turning Wood Waste to Advantage

During the war the utilization of the waste products from the resaw mills and woodworking plants in Norway and Sweden has been developed in a most efficient manner. Alex. H. Oxholm, who has been studying the Scandinavian methods for U. S. Bureau of Foreign and Domestic Commerce reports that more money was made during the war from the utilization of waste products than from the sale of the lumber itself. The edgings and mill ends are made into staves, broom handles, boxes, laths, etc. The narrow edgings and sawdust are either sold as fuel or converted into charcoal. The pulp mills in Sweden are paying \$1.35 per cubic yard for chipped edgings and other refuse. Some of the larger plants have realized handsome returns from the sale of what was once treated as so much waste.

What a number of purposes three-ply was used before the war. Its scarcity and price have caused substitutes to be used, which do not give satisfaction. It would be as well if the manufacturers of plywood use all their endeavors to again increase the uses of plywood.

Upholstering and Trimming

R. J. Simpson on British Furniture Market

Mr. R. J. Simpson, managing director of the Arnprior Cabinet Co., Limited, Arnprior, Ont., recently returned from a business trip to Britain. While there he made a careful study of the British markets and requirements with a view to engaging in the export business. The following is Mr. Simpson's reply to an enquiry made by the "Canadian Woodworker":

"There is undoubtedly a very large demand in Great Britain and Europe for household furniture. Prices in England are high but it must be remembered by Canadian manufacturers that ocean freight rates are exceedingly high. I think, however, that with the high freight rates Canadian household furniture could be delivered to compete with their domestic product.

"My observations show that only high grade furniture would be saleable in Great Britain and extra caution should be taken to see that all goods are strictly high grade. Great stress is laid upon hand dove-tailing in England and the finish has to be of a very peculiar shade involving the necessity of careful selection of wood to give the required beauty of grain and figure.

Packing a Very Important Item

"Packing is one of the most important items to be considered. The most satisfactory method of packing is to wrap all goods in oil paper and with three to four sheets of ordinary kraft wrapping paper. All goods should be packed in boxes made of tongue and grooved 7/8-in. lumber and bound with strap iron. Excelsior pads should be used freely.

"It is almost impossible to engage in this business without having samples showing what is required in construction, design and finish to suit the English market. I found that the samples which I took over would not do at all for the English trade.

"There is also a market for office furniture in the way of desks and chairs which would also have to be of the better class. Desks and chairs would all have to be shipped K.D. and extra care, as in the case of household furniture should be taken in the manufacture and inspection of these before shipping. A good many desks are made in England but the demand at present appears to exceed the supply. Filing cabinets are made by a great number of firms there both in wood and steel. I have been asked to send samples of high grade filing cabinets but as already intimated the construction has to be altered to suit the English market.

Canadian Factories Must Prepare

"There have been a number of English buyers on this side of the water looking principally for desks and I am advised our factories are not in a position to take care of this business. English factories are rapidly installing efficiency methods and Canadian manufacturers should realize that their goods will be subject to very critical inspection. It is, of course, not very encouraging for English buyers to come over here and

find that they cannot buy such articles as desks and it should be obvious to our manufacturers that they must enlarge their plants if they intend getting into the export business and at the same time take care of their home trade."

Furniture Factory Wanted in B. C.

The manufacture of furniture from British Columbia woods to supply the needs of British Columbia at a price far below that charged for eastern products is being encouraged by the Provincial Department of Industries. Many schemes have been laid before the Department by various concerns with requests for assistance and it is probable that before long a company will commence the manufacture of furniture.

In looking over the various industries of the province, officials of the Industrial Department were struck by the absence of furniture manufacturing and the high prices charged for furniture imported from the east. The various commissions reaped before the furniture gets into the hands of the consumer and the double freight rates charged by the railway companies, on account of the bulk of the product, unite to make furniture perhaps the most expensive item in the establishment of a home. All this in spite of the fact that large quantities of the right kind of wood for furniture may easily be obtained in the province.

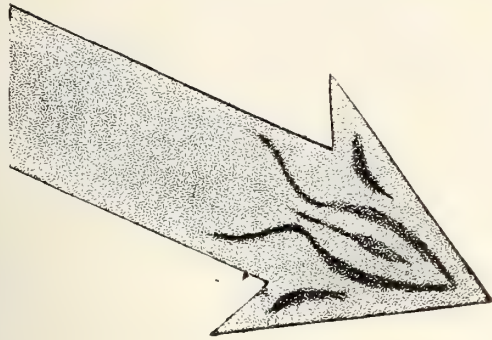
Raw Materials in Abundance

A company installing a furniture factory would be able to secure besides the more common varieties of B. C. timber, cypress from the Queen Charlotte Islands. In addition the manufacture of upholstered furniture brings into use a kind of seaweed which could be obtained in large quantities along the seaboard.

The raw materials are at hand. All that is wanted is the plant to work them up. Such an establishment would require an initial capital of about \$100,000 and would, of course, be established at some point on the coast of the mainland or on Vancouver Island. It would be able to supply practically the whole of British Columbia's demands at present and for some time to come. The idea that the Industrial Commissioner has in mind is that a firm home market should be established before the export business is attempted.

Demand Strong at Present

The home market would be probably better now than at any other time in the history of the province. With the Dominion Housing scheme resulting in the establishment of many new homes and the settlement of returned men on the land all over the country, the demand for furniture will be very great, and the demand will be for cheap furniture, furniture which will be easy to manufacture and which would sell at a price that will go a long way to thwart eastern competition.



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Do Your Brushes Get Proper Care?

A Brush Well Broken-in is More Valuable Than a New One—Care, Cleanliness and Proper Storage Lengthens the Life of Brushes—Future Supply Uncertain.

By Dixie Wells

In these days of conservation, it is important that everything contributing to the manufacture and finishing of furniture receive proper care in order that profits may be assured. While it is an old saying that it is a poor workman who finds fault with his tools, it is also true that a good workman takes care of them.

A good brush, for instance, that is well "broken-in" is worth many a new one. Someone has even been so bold to state that the efficiency of a finishing room can be judged by the condition of its brushes. This is rather a broad statement, but experience demonstrates that it is as reliable as many other gauges of the work.

If it is true that the standing of a shop can be largely determined by the quality and condition of the brushes used therein, a poor brush is dear at any price, for perfection in finishing cannot be obtained, regardless of the quality of finishing materials, without the use of a proper brush and the best brush obtainable is none too good if efficiency is to be maintained. When a shop is the possessor of a good stock of brushes it behooves the finisher to study methods of use and treatment that will best tend to prolong the life and usefulness of this important part of finishing equipment. It is one of the details in any shop where knowledge and care means economy.

Cleanliness and Care Important Details

I have seen the inner workings of finishing rooms (rare I am glad to say) where the brushes in daily use were dirty and gummed up from the handle to the end of the bristles, where the brushes have been set up until the bristles are bent to an angle of nearly forty-five degrees and hard as leather.

Brushes need to be constantly watched in order that their preservation may be fully assured. Where new bristle brushes are used, care should be taken that they are kept "bridled" until they have worn down sufficiently to prevent them from slumping into loose, uncontrollable slush spreaders, with no shape or form, and the bristles misplaced and hardened by wreckless use.

The matter of putting away a brush without proper care after use, ought to be put down to criminal carelessness. There should be an adequate receptacle for the safe storage of all brushes of any denomination so that each will hang independent of and unmolested by its neighbor. For this purpose a five gallon varnish can makes a desirable keeper. Either cut off or unsolder the top of the can, and then paint the interior surface with a good half oil paint. Cut notches in the top edges of the can for the insertion of the wires used to suspend the brushes from, and you have a receptacle hard to beat. An affair of this kind will hold from a dozen to fifteen brushes without crowding, and if you

use care in suspending each, after use, you will find no "splurged out" bristles to impair otherwise good work.

Storage Liquid Deserves Attention

You must also give attention to the water in which the brush stock is submerged. Change it least once a week, for if this is not done the liquid soon becomes dirty and impregnated with an acid, fatally injurious to the lasting quality of any brush.

When a brush becomes sticky or smeared, it should be thoroughly cleaned without delay, otherwise a perfectly good brush becomes an outcast and an alien to good work. The brushes preserved in clean, soft water properly cared for during use and afterwards will outwear two of an inferior grade, and in addition enables the painter to do better work.

Camel's hair brushes and blenders are strengthened and their value increased by thorough cleaning and proper "hanging," in receptacles which should unquestionably be provided and next comes the liquid, regarding which there seems to be some question. Some prefer oil, others varnish. Oil is cheaper and quite as good a preservative. In shops employing American varnishes exclusively, one often hears its merits advocated on the ground that the oil remaining in the brush after it is removed from the keeper, is of decided benefit to the surface upon which the brush is used.

Without attempting to disprove the assertion it must be said that finishing varnish, or better still, the finished varnish minus the dryers, is by all odds the safest liquid yet devised for preserving varnish brushes. It does not add, as in the case of oil, an unevenly distributed slow-drying factor to the surface in conjunction with the main body of varnish. It preserves the brush as well and keeps it constantly toned in harmony with the varnish it is intended to spread.

Old Brushes Often More Valuable

A good paint or varnish brush is the finisher's friend, don't throw it away just because it has become clogged and stiff. An old brush properly "broken-in" is much more fit than a new one. If it has become clogged with paint or varnish simply immerse it in a good modern paint and varnish remover and let it stand for a while. The gummy substance will soon dissolve and settle to the bottom of the receptacle. When the brush is clean and allowed to dry you will find it completely restored to usefulness.

Like many other industries, the manufacture of brushes has become effected by the war and after war conditions, particularly as there are few imports. The demand from other countries, particularly China and India has been greatly increased, and it behooves everyone to conserve their stocks.

Of course, the color of bristles is of no great importance, but actual quality, texture, stiffness or elasticity for different uses is a combination which it is hard for the manufacturer to produce. Originally, Russian bristles were almost exclusively used in all big paint brushes, but now Chinese and India bristles are being

used with Russian products for this class of spreaders. French bristles in the fine white, soft grades have been generally used for fine varnish and finishing brushes, but now soft Chinese bristles are employed, and are giving good results, both in working and wearing qualities.

The scarcity of French bristles is forcing the use of soft hairs for fine varnish work. Oval varnish brushes

are made of practically all Chinese bristles, and there has never been better stock for the use to which this style of brush is put.

We understand that the future bristle business is very uncertain, thus brushes are far too valuable in these days to mistreat, and their proper care not only contributes to economy but enhances the skill of the workman.

Choosing Solvents for Various Purposes

An Analysis of the Different Solvents in Everyday Use Giving Chief Characteristics and Uses

WHAT solvent will I use to slow or quicken the drying of this stain or to make it penetrate deeper and still not be injurious to the workmen? Such questions as these are the result of everyday problems in the finishing room. The following notes on the various solvents used by the wood finisher will prove helpful to those whose daily work is with the use of stains and fillers.

90% Benzol (C_6H_6)—

is a light fraction derived from coal tar and has great solvent properties. It is known chemically as benzene and must not be confounded with "benzine," the commercial substance obtained in refining petroleum. Coal tar is a thick liquid obtained in the manufacture of illuminating gas from bituminous coal. It is an extremely complex mixture, from which many primary substances are obtained. When this tar is heated the volatile liquids pass over first. These are collected in vessels containing water. The first part of the distillate floats on the water and constitutes what is called the light oil. Benzol is prepared from this light oil so derived. The light oil is treated with caustic soda which removes the phenol group (carbolic acid, etc.). The residue is then subjected to fractional distillation by which means the benzol is obtained in nearly pure condition.

Nitro Benzol ($C_6H_5NO_2$)—

This solvent is made by treating benzol with fuming nitric acid. The commercial practice is to use a mixture of ordinary concentrated nitric and sulphuric acids. The sulphuric acid facilitates the reaction by preventing the dilution of the nitric acid by the water which is formed. Nitro benzol is better known as oil of mirbane and has an odor like that of bitter almonds. Its vapor in concentrated form is poisonous. Nitro benzol is even a better solvent than benzol, but is not used to any great extent owing to the objectionable odor and high cost. It is sometimes used in combination with benzol and other solvents in an oil stain as it helps the penetration of the stain, slows the drying and increases the solubility.

Solvent Naptha ($C_{10}H_{16}$)—

is chemically known as Xylol and is obtained in the manufacture of benzol. This is the portion of the light oil obtained from the coal tar which distills between 145° and 160° C. In this fraction the solvent naptha known to the trade is a mixture of Xylol and several higher boiling compounds, and is sometimes called 160° Benzol. Solvent Naptha is an excellent solvent and is quite extensively used in oil stains. In many respects it is similar to benzol, but is much slower in drying and greasier. For this reason it is used extensively in dipping stains. It is sometimes called

coal tar naptha and should not be confused with petroleum naptha which is different in every respect.

Benzine—

is a light fraction of petroleum oil. It is obtained from the refining of petroleum. The crude oil is subjected to distillation. The lighter products distill according to their specific gravity or boiling points, in the following order, or fractions: petroleum, ether, gasoline, naptha and benzine. All of these are lighter than kerosene. These oils, as distilled, are complex chemical mixtures. The names are commercial, each of which applies to a complex mixture of hydrocarbons. The benzine mixture is further treated with sulphuric acid which removes undesirable impurities and improves the color and odor. It is then thoroughly washed with water; neutralized with caustic soda and allowed to settle. The oil and water separate and the benzine is drawn off ready for use.

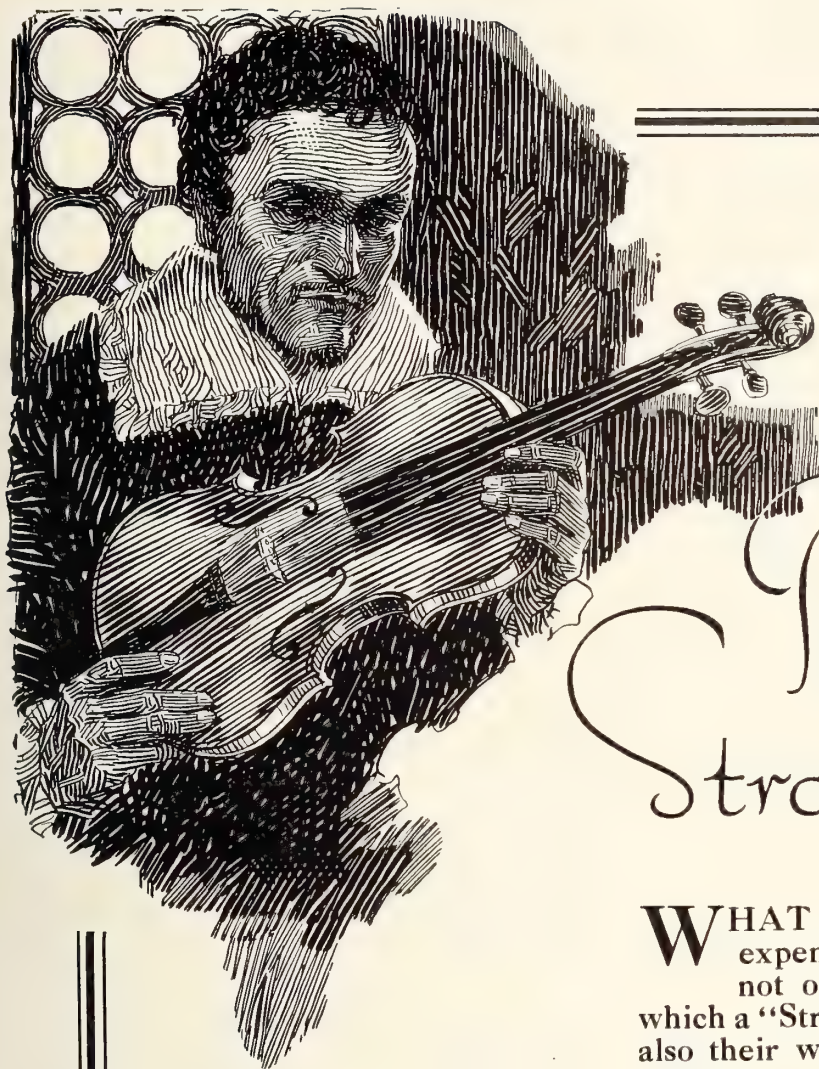
Benzine is sometimes used in oil stains, but as some oil dyes are not entirely soluble in benzine it must, therefore, be used in combination with other solvents. When used in an oil stain it has a tendency to hasten the drying due to its rapid evaporation. In combination with turpentine it makes an excellent reducer for wood fillers.

Acetone (C_3H_6O)—

is a colorless liquid of great penetrative power. It is a good solvent for many carbon compounds such as resins, fats, waxes, etc. It occurs in the liquid which is obtained from the destructive distillation of wood and is soluble in water and alcohol. It is made commercially by the dry distillation of gray lime (acetate of calcium) in retorts, which are connected to a cooling apparatus. The distillate separates into two layers heavy acetone oils and light acetone. The light acetone is redistilled to obtain the pure acetone. It is utilized in oily stains because of its very rapid evaporation and its tendency to strike deep into the wood and take the color with it. As a reducer for certain types of wood lacquer it is very useful because it acts as an extender for the lacquer base and hastens the drying. The heavy acetone oils are used as a solvent for the nitro cellulose, which is the base of wood lacquers.

Amyl Acetate ($CH_3COOC_5H_{11}$)—

is known to the trade as banana oil because of its odor. It is a clear colorless liquid which is slower drying than alcohol and is of an oily nature. It is not used in the manufacture of stains, but is used extensively as a solvent for gun cotton in the manufacture of lacquers and in other cellulose products. In combination with other solvents it is used in the manufacture of lacquer reducers and pyroxylin enam-



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els. It is made by treating amyl alcohol with sulphuric acid and distilling the mixture in the presence of glacial acetic acid. The distillate is neutralized with lime and redistilled to obtain pure amyl acetate.

Turpentine Substitutes

are usually prepared from suitable fractions of petroleum and vary greatly in specific gravity, flash point and solvent power. The selection of such a substitute must be based on the requirements. It must be completely volatilized during the drying and must have suitable solvent powers and when used as a reducer for varnish, it must not cause a precipitation of gum in the varnish. The use of a substitute having a flash point and about the same specific gravity as turpentine is, therefore, recommended. Being less expensive than turpentine, turpentine substitute can be used to advantage where conditions of service make it advisable. Some substitutes are blended with slow drying, cheaper solvents, and are offered for less money. The use of such cheapened substitutes as filler or stain reducers always causes trouble, by slowing the drying of the filler and causing the precipitation of some of the oil dyes in the stain.

Wood Alcohol (CH₃OH)—

is chemically known as methyl alcohol. It is prepared by the destructive distillation of wood. Two classes of woods are used; hard woods, such as oak and maple, and resinous woods, such as yellow pine and fir. The hard woods yield larger quantities of alcohol than the resinous woods. The wood is cut into lengths of about four feet, like ordinary cord wood. The finer the wood is cut, the more quickly the distillation proceeds, but as the charcoal is used as a by-product it is advisable to have medium size pieces to start with.

The simplest form of apparatus for burning the wood consists of an enclosed vessel called a retort surrounded by a suitable furnace in which heat is generated. The retort usually holds about two cords of wood. When the furnace is heated the wood is charred and the hot vapor arising in the retort passes over into a condenser and is converted into a liquid form.

This distillate settles in the condenser in three distinct layers which are from top to bottom as follows: crude wood turpentine, pyroligneous acid and tar. The acid contains from one to twelve gallons of alcohol per cord, depending on the kind of wood used. Therefore this acid is neutralized with lime and redistilled, the crude alcohol passing over as the first fraction.

By further distillation a product containing 95 per cent. wood alcohol is obtained. This is the product known commercially as methyl alcohol. Its vapors are very poisonous when concentrated, often causing irritation to the eyes and even temporary loss of sight, unless the work room in which it is being used is well ventilated. This is a point which finishing room foremen should remember when using large quantities of wood alcohol in order to safeguard the health and efficiency of their men. There are practically no instances where denatured alcohol can not be substituted for wood alcohol and this is the best way to avoid the conditions mentioned above. (See article in this issue on alcohol.)

Continued in the September issue.

Comparative Furniture Prices 1914—1919

During recent years there has been a steadily increasing advance in the price of all house furnishings. In the last few months there has been a rapid upward movement in prices, in which advance furniture quotations have more than held their own. Those that are in a position to judge believe that the peak has not been reached and look for a further increase of from twenty to thirty per cent. sometime early this fall.

In April prices advanced 20 per cent. and many thought that would be the only increase. However, in May a jump of from 10 to 20 per cent. was made and that was followed by a further increase of 20 per cent. on July 1st. Even at present prices practically all furniture manufacturers are sold for months ahead and many are refusing to accept further orders until they have been able to fill those already booked.

Comparison of Prices

The manager of a large furniture store compiled the following comparative list of prices, on moderately priced furniture in 1914 and 1919. Many of these items were based on prices prevailing prior to April 1st, and could not be sold at these prices had they been purchased at present quotations. A glance at the following list will show that a four-roomed house could have been comfortably furnished, in 1914, for \$557.45 would today take \$1130.00 to furnish it on the same scale.

Living-room Furniture		
Plain Chesterfield	75.00	140.00
Arm chairs to match	22.00	42.00
Table to match	14.00	25.00
Sectional bookcase	14.50	27.50
9 x 12 Axminster rug	47.50	75.00
Dining Room		
Buffet in 1/2-cut Oak fumed finish	29.00	57.00
China cabinet to match	25.00	45.00
Extension table, round top	18.00	35.50
Six chairs, leather seats	26.50	53.50
9 x 12 Axminster	33.50	60.00
Bedroom Suite		
Dresser, black walnut	35.00	67.00
Chiffonier with mirror	35.00	60.00
Bedstead	28.00	54.00
9 x 9 Brussel rug	20.00	32.50
Dressing table	28.00	52.00
Side chair and rocker	13.00	21.00
Spring	4.50	7.00
Mattress (felt)	5.75	13.00
Pillows	2.50	4.50
Kitchen		
Coal and gas stove	45.00	76.50
Kitchen cabinet	21.00	37.00
Kitchen chairs	45	1.00
Two tables	3.00	5.50
10 x 12 Oil cloth	2.25	4.00
Blinds, six	8.00	12.00
Curtains, six pairs	12.00	27.00
	\$557.45	\$1,130.00

So far the cry of the buying public seems to have been for quality. They wanted high grade furniture and were willing to pay any price to secure it. There seems to be a slight reaction setting in and today people are showing a tendency to examine prices more closely and to grumble at the prices that they have to pay. While further advances are predicted, it is a question if the prices of furniture can be increased very much more without it having a marked effect on the volume of business transacted.

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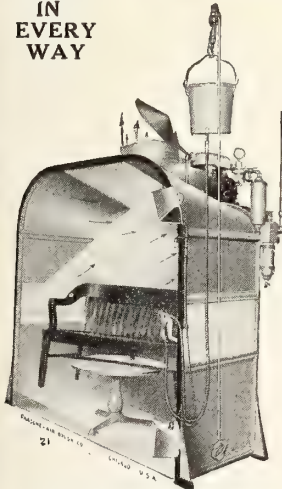


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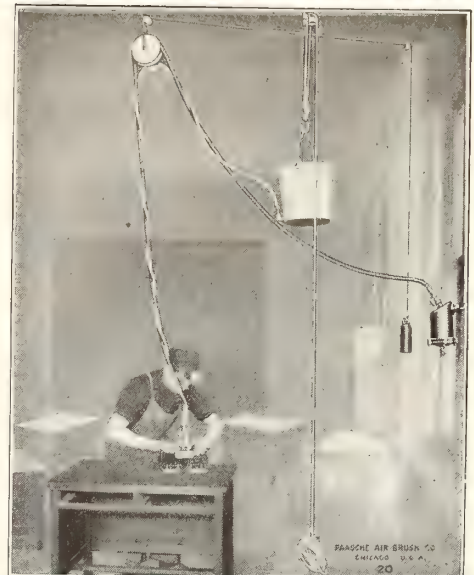
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Veneers AND Panels

Satisfactory Results in the Glue Room

Economy and Efficiency Controlling Factors— Have Work Done in Systematic Manner—

By R. N. Y.

The practice of economy in the veneering department has become more of a necessity in the profitable operation of the glue-room than ever before. In these "after war times" the requirements and demands are of such a nature that only by strict economical operation of the veneering department can a manufacturer hope to carry on the same on a successful basis.

Inclining toward the efficient operation of these veneering departments, some of the firms turning out a large volume of glued-up stock, have introduced systems tending toward higher efficiency in the use of glue, veneers that have proven so valuable that some of these plants' veneering departments, of which scarcely managed to "break even" have been placed on a successful paying basis, despite the high cost of materials, labor, etc.

If we were to carefully analyze some of these veneering departments which have been turned from a liability into a profit or dividend producer, what would we find has wrought such radical changes in the earning capacity of the department? Is it the going after bigger game, the cutting down of the glue room crew, or a reduction in their wages or prices paid for materials? Indeed not, the secret of success in the economical operation of the veneering department, as one manufacturer expressed it, is in "taking care of the small things" that arise in the daily routine of operating any veneering department, in fact it can be safely stated that to the small things, which would superficially seem of minor importance, which continually arise in glue room work, can directly or indirectly be traced the making or unmaking of many a veneering department.

It is the Small Items that Count

Let us glance at some of these apparently insignificant things that many so-called modern establishments often allow to exist, by overlooking them week by week, and which often prevent an economical and profitable operation of the glue room, despite the efforts often put forth to make this branch a paying proposition. There is perhaps no other department in any woodworking plant, which glues up veneers, where a systematized method of doing work will accomplish more than the veneering department.

In the first place the correct billing of all orders in the proper manner is absolutely essential if a large variety of work passes through the glue room. It has often happened that through carelessness or error in billing, panels have been veneered with the grain of the face veneers running in the wrong direction, necessitating the making of new panels, or insufficient information given to the glue room crew with regard to thickness of finished panel, the thickness of cores to be used, and the thickness of face veneers, are also very prolific sources of loss if not remedied.

A certain amount of veneered work turns out defective, and is rejected for one cause or the other, and a daily report of such rejected pieces should be made out and kept on file by the foreman or superintendents. Only the foreman or superintendent should have the authority to issue the necessary order for additional veneers, etc. for the replacement of the defective pieces.

Advantage Gained Through Daily Reports

It may be well to cite the case of a large wood-working plant which for some time had experienced considerable trouble with a large percentage of defective veneer work, the defects often averaging more than 10 per cent. of the total orders. Of course, no account was kept, as may be surmised, of the amount of the veneers used on each order, the veneer crew simply helped themselves to whatever was required to get out the order, even if the defects were to run as high as 50 per cent. On an inventory recently made of the veneers on hand it was found that someway a large percentage of veneers had disappeared, nobody knowing where. This set the superintendent thinking, and he inaugurated a system of daily reports, as previously stated, of all defective stock turned out the day before in the glue-room, with a notation of the reason for rejection, such as loose veneers, split veneer, warped or buckled panel, overlapping of centre cores and so forth. The result was that inside of a month's time the percentage of defects had been reduced from slightly over 10 per cent. on the average, down to practically 2 per cent. of the total amount turned out. This goes to prove that keeping track of the refacing, or getting out of only a few panels each day to make up for spoilings, is well worth while.

System Reduces Confusion and Expense

In other instances, and these indeed are many, no attempt is ever made to have the veneering department work in a systematized manner. Often panels are gotten out which will not be needed for several weeks, while other orders on hand, more important and urgent as to shipping date, are held up far past the date promised and in addition often tying up other departments of the plant, causing a loss in time through the departments being held up on these orders.

The work coming through a perfectly systematized veneering department should go through its various operations in a regular manner, without suffering any interruptions, very much like water flowing down stream. This means that the proper provisions have been made so that the work proceeds through its various stages in a straight line, and any causes tending to retard the flow should be immediately remedied, thus keeping the cost of production down to a minimum, and thereby also lowering the overhead. Any saving made therefore in actual production makes a difference of almost twice the amount saved in the selling price of the veneered product. A concern working along these lines will have no trouble keeping the glue-room going and should be able to outdistance all competitors in its territory.

One Minute to Put Pressure on Face Veneers

Reasons Why Speed is a Big Factor in Successful Veneering—Differentiating Between Fine Face Veneers and Plain Panels

By J. C. Taylor

One of the important things for every man interested in glue-room work to learn is to distinguish between the requirements for putting up fine face veneer work and those for making plain veneer panels. There is just as much difference here as there is at the cutting machines where the veneer is made. The finer work requires special attention and an order of treatment not considered essential in the making of common stock, though of course it would not hurt the plain stock to give it the approved treatment for fine work. It would simply make it cost more, so much more as to outweigh for the present at least the advantage gained. It is failure to understand this difference in requirements that is responsible for perhaps a major part of the glue-room troubles—stock showing up bad after it goes through the finishing room.

And now, of course, it is up to me to elucidate, to make plain what the differences are in the requirements, and to explain what happens when they are not observed, and why. Well, it is all comparable with the differences at the cutting end, where knives must be kept keener and free from gaps and the machine must be more nicely adjusted all around for cutting fine face stock, for the simple reason that what might be classed as minor defects in cutting plain stock would spell ruin for fine face veneer.

The two main points of difference are that more pains must be taken in handling the fine face work and more speed must be used—that is, less time allowed to elapse between the time of spreading the glue and getting the work under pressure. This is a call for more speed and more pains at the same time, two contradictory things, and it is that which makes it somewhat difficult. But it does not in any way alter the essential facts.

When Most Swelling Occurs

To illustrate calls for a little dissertation on expansion and contraction and the part the moisture in applied glue plays in this connection. Wood does most of its shrinking when the last of the moisture is being dried out. This is a rule that works both ways, for just a little bit of moisture added to a dry sheet of veneer—that is, the first little bit—will cause more swelling than probably twice that amount added after the first little bit has gotten in its work. Also, that first little bit of moisture gets busy right away as soon as it comes in contact with the veneer, hence the call for swift action to get the work under pressure before expansion takes place, which in time will be followed by a shrinking that will make cracks in the fine face veneer, cracks which do serious harm to its beauty, and yet would perhaps hardly be noticed in a plain panel.

A number of references have been made by different writers to face checking, to the overlapping of crossbanding, and to the time permissible between the spreading of glue and getting the work under pressure. All of these were but different angles of the same matter, and they all serve as in indication of a pretty general realization that as a rule there too much time—and expansion—takes place between the glue spread-

ing and the getting of the work under pressure. What we need along with this realization is an understanding of the distinctions that can be made between the laying up of common stock and fine face veneer, because the main trouble is with the fine face work, and it is there we need to introduce the reform of quicker action, along with more pains with the work.

An Authority's Opinion

Among those who comment upon the time that may be permissible between the spreading of the glue and the getting of stock under pressure, is one authority on crotch-laying, who says, in reducing the matter to minutes, that he is not willing to make it minutes, but puts the limit for insuring a good job at one minute. Now just mull over that for a while and you will get some idea of what I am driving at in this matter of distinguishing between the requirements for fine face work and those for plain work. Crotch is about the most exacting of fine face work, but if other fine face work were given the same treatment there would certainly be fewer complaints about face checks after the work is finished.

We need to keep before us the fact that veneer begins to swell the instant moisture from the glue comes in contact with it, and it does the biggest part of its swelling in a few minutes. That is a thing we have given but little attention to in the making of plain built-up work. The guide as to time has been the glue and its setting. We are told that as a rule glue will do its preliminary setting in about twenty minutes. Figuring from that, we may assume, so far as the glue is concerned, that if we get stock from the spreader into the press in ten minutes it will be all right. That is what we have been doing a lot of in the past, figuring on the glue-setting time and being governed by that, instead of taking stock of what has been happening to the veneer meantime. That is why we have had cases of crossbanding overlapping at the joints. One man tells of a case where the crossbanding of 1/20-in. stock in a panel 12-ft. long expanded from 3 to 5-in. during the time between the glue-spreading and getting the work under pressure. That is a graphic demonstration of what has been happening to veneer while we have used as a guide in glue-room work the time that may be taken before the glue sets. Is it any wonder we have found face checks in the finished work?

Judgment Should be Used

In view of this the scientific answer would be quicker work all around, a getting of the work under pressure before the expansion starts. But at present this multiply the cost as to curtail its use. In plain built-up work the fine face checks resulting are hardly noticeable, consequently are not considered a serious defect. That is why in the Russian method green, or comparatively green, stock may be glued up and then dried afterward. It is a hint, too, that when we do get to drawing the line of distinction between the requirements for fine face work and for common work there will be a general turning to some modification of the

Russian idea in the making of plain work as offering advantages in cost saving.

Following the theory of quantity work is what has played hob with our progress in fine face veneering. We take panels that call for face veneer and take the time to pile them up in mass piles comparable with common stock. This makes for quantity and a minimum cost, but it also leaves the way open for expansion while the stock is waiting to be put under pressure, and that is the main source of all the troubles and complaints about bad face work in the glue room.

There may arise in the minds of some a question here of how the prompt getting under pressure will save the situation. The answer is that veneer under proper pressure will not expand, the pressure serving to clamp and prevent it. There is a somewhat extended scientific explanation of why this is, based upon the compressibility of wood, which it should not be necessary to set forth here, for the statement of fact that pressure will prevent expansion should be sufficient.

Quick Action in Order

And now as to just how much expansion takes place and how soon it starts, any attempt at specific figures must be accompanied by qualifications. Veneer will not expand to its full original green size, for it loses some of its swelling and shrinking tendencies with each successive wetting and drying out. But the essential point is that it will swell with the moisture from glue, and it gets busy at the swelling before the glue begins to set; in fact, it gets busy so soon that, as the crotch man says, it may not be a matter of minutes, but of getting under pressure inside of a minute, to insure against that expansion which will mean face cracks afterward. In a word, to get the best results with fine face work we must institute an order of quick action in pretty strong contrast to the general glue-room practice too often indulged in indiscriminately on both common and face work. It will do for the common work, but fine faces are calling loudly for a different order of treatment.

It will take time and experiments to determine just how much we should shorten the period between glue spreading and pressure, and in the final analyses it will vary somewhat with different woods and kinds of work, and with other factors that enter. Broadly speaking, thin veneer will take on enough moisture to start expansion in less time than quick veneer, so the thickness of the face stock being used is a factor.

The hot glues will start expansion in less time than the cold glue solutions, for the simple reason that the hot moisture is thinned with heat and will more readily penetrate the wood.

If the face of the wood is glazed or glossy it will take the moisture longer to affect it, but this is no argument in favor of such a condition, for a poor glue joint may result from lack of penetration.

Some woods take up moisture more readily than others and expand more under its influence. Walnut, mahogany and ash are among the woods which show small expansion compared to others, and quartered oak will expand less than plain oak. That is why there is less trouble with these woods than some others, and it illustrates one of the many factors which enter to add complexity. But after all, the big point is this: we must learn that handling fine face veneer in the glue room is a radically different thing from the making of plain built-up work, and develop methods

accordingly in which the expansion under glue moisture can be held in check.—“Veneers,” Indianapolis.

A Possible Cause of Warped Veneers

The June issue of the “Canadian Woodworker” contained a list giving the comparative strength of the different woods commonly employed in manufacturing furniture and other veneered work. A glance at this list shows a wide variation in strength of different woods or in other words some species are considerably stronger than others.

Now if a three ply panel were glued up with a sheet of basswood on the back and black locust on the face as the latter is nearly three times as strong as basswood it is only natural that the stronger stock would pull the weaker wood thus warping the panel.

The two woods mentioned are at the two extremes but white oak is half as strong again as chestnut, poplar or cottonwood. A panel with oak veneer on the face and poplar on the underside would show a tendency to curl. This might be overcome through care in handling, by holding the panel straight and piling with sticks until thoroughly dry, but there would always be a certain amount of strain or tension in that piece of work and if it were ever stored where it would absorb any moisture the tendency to warp would immediately manifest itself.

Another fruitful source of warped panels is in not laying the grain of the core at right angles to the grain of the outside veneers. Experiments have shown that with the core laid at an angle of only five per cent from the right angle the panel will show a tendency to buckle.

If one were to use stock of an equal strength on either side of all veneered work and to make certain that the core is properly laid, two prolific sources of warped panels would be successfully eliminated.

Enlarging Lansdale Factory

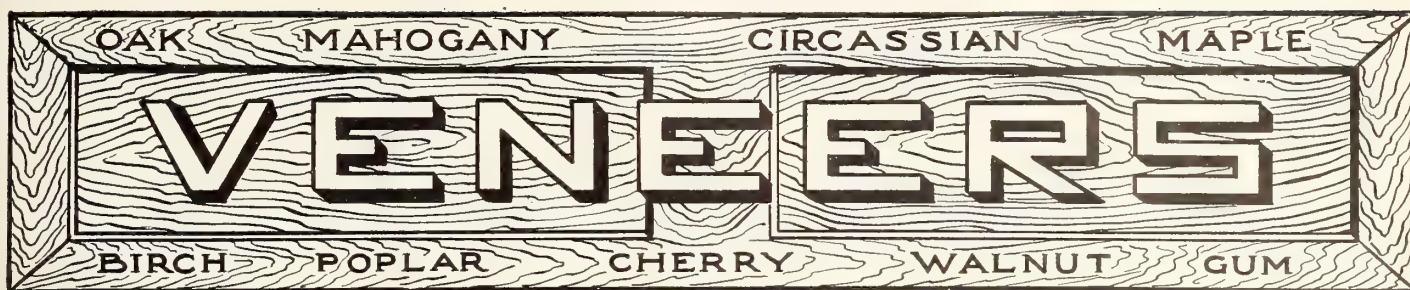
It has been learned that the Perkins Glue Company is making an addition to their factory at Lansdale, Pennsylvania. This is the third or fourth addition which the Perkins Company have been obliged to make, and indicates a steady growth in their business. The increased requirements for capacity in which to carry on the manufacturing process of Perkins glue also requires larger warehouses to take care of the material needed in the manufacture of the glue, as well as the finished goods. Besides the warehousing capacity at the factory, the Perkins Company maintains warehouses at South Bend, Indiana, Tacoma, Washington, Jamestown, New York, and High Point, North Carolina, as well as at their Canadian factory located at Hamilton, Ontario.

The Perkins Company reports very good business and seems to consider that conditions are rapidly getting back to a normal basis.

Rotary Veneer Manufacturers Meet

The rotary veneer section of the American Hardwood Manufacturers Association held a very enthusiastic meeting in Memphis, Tenn., recently. There were a large number of members in attendance. It was disclosed that the demand for veneers was very strong while production was encountering the same difficulties that are curtailing the lumber output.

John M. Prichard is secretary manager.



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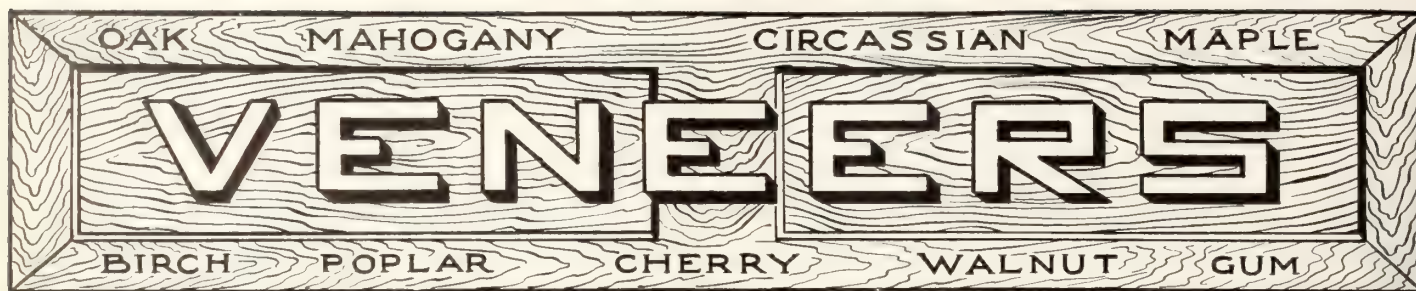
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One of our principal competitors recently paid us the compliment of the voluntary statement that our position in the hardwood and veneer trade was the result of never varying from the traditions on which our organization was founded.

Northern Grown Oak

Fifty-two years of making and finishing the right kind of product has resulted in service of that character becoming not only a trade asset and the basis of a National reputation, but a veritable business habit. Our endeavor has for so long been to never deviate from the standards of 100 per cent excellence as laid down by those who founded this business, that it is practically a matter of impossibility for us to vary the quality of our goods without a complete re-organization over to a high-speed, quantity basis.

American Beauty Walnut

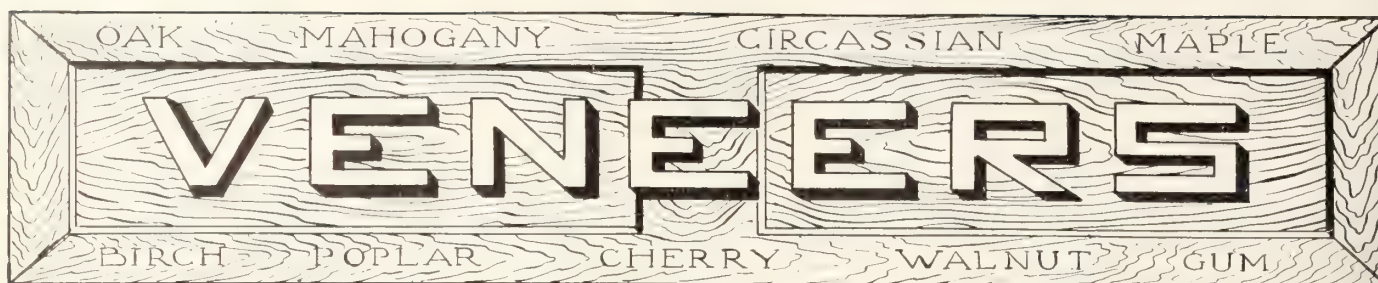
It is recognized by the discriminating trade that our service incorporates not only goods of the highest possible excellence, but thorough understanding of the customer's requirements in order that his share of our always choice selection of goods may be precisely what he prefers.

Our knowledge of consumers' needs and our ability to exactly meet those needs, recommend our service to you as a careful and experienced buyer.

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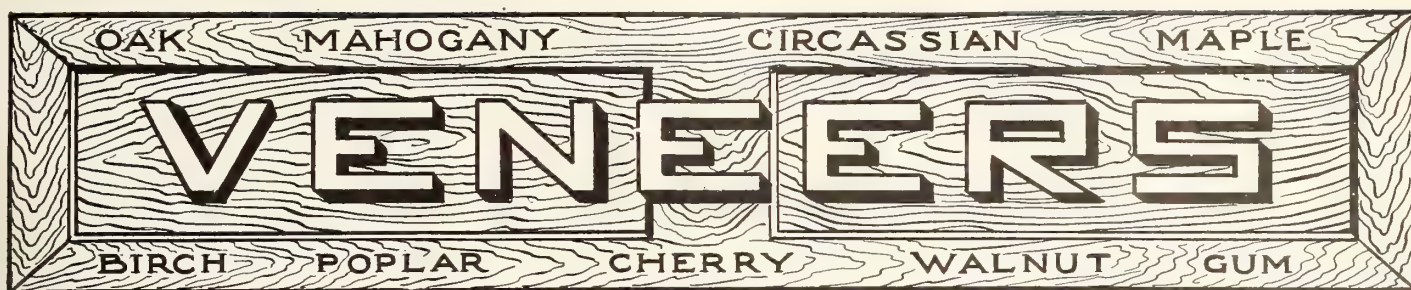
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1,000,000 Feet Quartered Red Gum to select from

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In the Rush of Increasing Demand for Veneers

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Effect of Age on Casein Glue

That casein glues can be successfully used any time after mixing up to the time they become unworkable, is the conclusion drawn from a number of tests at the Forest Products Laboratory. Ordinarily, casein glues exhibit a life of from 3 to 5 hours, though there are some which remain useable over a much longer period. The laboratory has, from time to time, received inquiries as to whether or not these glues could be relied upon to give as satisfactory strength and water resistance after three or more hours as they do immediately after mixing.

To study this question, shear blocks and plywood panels were made up hourly starting at the time the glue was mixed and continuing until the glue became so thick that it was unworkable. The blocks were allowed to season for seven days, and were then tested in shear in the usual manner; the panels were given shear tests. Results of the tests on one commercial glue are shown in tables 1 and 2. These are typical of the results obtained with other glues.

Table 1.—Results of Joint Strength Tests

Age of glue in hours	Average Shearing Strength in lbs. sq. in.	Percentage of wood surface in failure
1/2	2170	24
1-1/2	2137	51
2-1/2	2276	58
3-1/2	2453	3
5	2098	23

Table 2.—Results of plywood water resistance and Strength Tests

Age of glue in hours	Condition after boiling 8 hours	Condition after soaking 10 days.	Av. shearing strength in lbs. sq. in.
1/2	O.K.	O.K.	261
1-1/2	O.K.	O.K.	289
2-1/2	O.K.	O.K.	349
3-1/2	O.K.	O.K.	294
5	O.K.	O.K.	257

Method of Determining Moisture Content of Wood

The Forest Products Laboratory, Madison, Wis., gives the following directions for determining the moisture content of wood:

1. Select a representative sample or disc of the material.
2. Immediately after sawing, remove all loose splinters and weigh the sample.
3. Put the sample in a drying oven 212° Fahrenheit (100° Centigrade) and dry until constant weight is attained.
4. Re-weigh the sample to obtain the oven dry weight.
5. Express the loss in weight as a percentage of the dry weight, thus:

$$\text{Percentage moisture} = \frac{\text{original weight} - \text{oven-dry weight}}{\text{oven-dry weight}} \times 100$$

Short pieces of wood dry out much more rapidly than long ones. In order to reduce the time required for drying, therefore, the length of the sample in the direction of the grain should usually be about 1 inch, or not more than to give the sample a volume of from 2 to 24 cubic inches.

It is important that the weight be taken immedi-

ately after the sample is cut, for the material is subject to moisture changes on exposure to the air. The degree and rapidity of change are dependent on the moisture content of the piece and the air conditions to which it is exposed.

In order to insure good results, the weights should be correct to within at least one-half of one per cent.

When placed in the oven for drying, the samples should be open-piled to allow free access of air to each piece.

Resistance of Animal Glues to Moist Air

That there is a close relation between the viscosity, and therefore the grade of animal glues and their moisture resistance is strongly indicated by recent tests made at the Forest Products Laboratory.

Test specimenas were made of 2 pieces of 1/8 in. birch veneer glued together with the grain in opposite directions so as to give 1 square inch of glued joint surface. The specimens were suspended in a humidity chamber with a 1-pound weight hung on each, and the time required for failure of the glue joint was noted. The first two tests were made at 98 per cent. humidity. In the third test the specimens were kept at 90 per cent. humidity for 120 hours, after which the humidity was raised to 98 per cent. No failure occurred at 90 per cent. The temperature used in each test was about 80 deg.F.

Resistance of Glues of Different Viscosity to Moist Air

Glue used		Test No. 1		Test No. 2		Test No. 3		
Number	Relative viscosity (Engler)	Jelly strength by Smith tester	No. specimens used	Av. No. hours before failure	No. specimens used	Av. No. hours before failure	No. specimens used	Av. No. hours before failure ^b
13	1.62	222	2	10 ¹ / ₂	4	12	4	24
7a	...	...	...	...	4	12	4	24
36	1.70	219	2	12 1/7	4	14 ¹ / ₂	4	24
37	1.92	256	2	13	...	...	4	44
34	2.00	267	2	17	4	26 ¹ / ₂	4	48
35	2.90	315	2	42	4	36	...	...
19	4.98	356	4	59 ¹ / ₂	...	...	...	...
21	4.14	338	...	...	4	48	4	66
9	5.48	416	...	...	4	66 ¹ / ₂	4	198

a Vegetable glue.

b After raising humidity to 98 per cent.

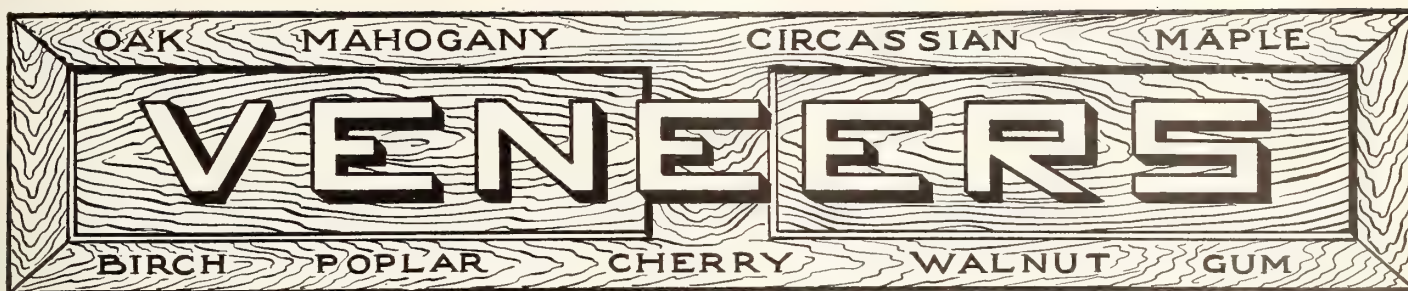
The results indicate that the moisture resistance of animal glues is proportional to the viscosity, jelly strength, and grade.

New Farquhar Press Catalog

The "Canadian Woodworker" is in receipt of the new catalog issued by the A. B. Farquhar Co., Limited, York, Pa., describing their line of hydraulic veneer presses, retaining clamps, hydraulic pumps, accumulators, gauges, etc. Included in the line is a number of hot plate veneer presses.

In the modern veneer room more attention is being given to the hydraulic presses and retaining equipment. The Farquhar retainer system is convenient and economical and their presses have stood the test of time. Catalogs will be mailed free upon request to the above mentioned company.

By-the-way, a wood-trimmer is not a cross-cut saw. Respect the machine and keep it solely for the purpose for which it is intended.



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		250,000'	4/4 No. 2 Com.	30,000'	4/4 No. 3 Com.
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75,000'	4/4 No. 2 Com.	75,000'	5/4 No. 2 Com.	15,000'	5/4 No. 2 Com.
		15,000'	6/4 No. 2 Com.	36,000'	8/4 No. 2 Com.
		30,000'	5/4 & 6/4 No. 3 Com.		
ELM		PLAIN RED GUM		SOFT MAPLE	
30,000'	12/4 Log Run			15,000'	12/4 Log Run
20,000'	6/4 Log Run	15,000'	4/4 F.A.S.		
50,000'	4/4 No. 2 and No. 3 Com.	129,000'	4/4 No. 1 Com. and Selects	PECAN	
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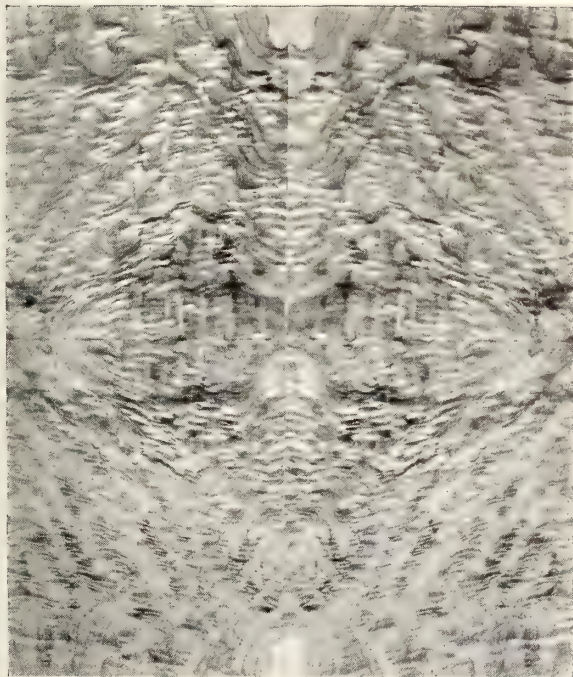
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Walnut has played its part both in usefulness and beauty from the butts of rifles to the stately, beautiful furniture which has pleased so many, yet none has proven better than Penrod Walnut; its beauty and soundness will win your approval immediately. We can make prompt shipments and you are assured of a complete order of walnut that comes up to its reputation in every way.

Penrod Walnut and Veneer Co.

Kansas City, Missouri, U. S. A.

Responds to Intelligent Handling Accurate Work on Planer Lessens the Labor in Other Departments—Plain Common Sense Needed

In speaking of variation in thickness that is so often found in core stock and other finished material one cannot help but wonder at the shortsightedness of many of the workmen in our woodworking factories. They do not seem to realize that carelessness and neglect on their part is causing difficulties, increasing the cost of production and to a great extent lessening the output of the various departments.

Variation in the thickness of stock is very often caused by machinery, such as planer or sander, that is not properly set or adjusted. It is my intention to explain a few of the simpler items that are commonly overlooked in many plants.

The planer is considered to be one of the easiest and simplest machines to adjust and operate but none-the-less it is a very important tool. Not long ago a planer operator came to me and said he was experiencing considerable difficulty in feeding the stock through and was under the impression that the pressure box was bent. He had raised the box but still the stock seemed to stick in one place.

I made an examination of the machine and found that the pressure box was not down as tightly as it should be. We adjusted the pressure box and ran a piece through the planer. The stock did not feed free like it should but I noticed that the knives were apparently in very bad shape. Some portions of the cutting edge appeared to be very dull or even badly worn thus making the stock thicker in those particular spots. We removed the fan pipe and had a look at the knives and found them to be in poor shape. As the knives were new and had only done a few hours work we were at loss to account for the shape we found them in. Upon testing them with a file I found them to be of a very uneven temper and the soft places had worn or hammered away very quickly.

The only remedy was to return the knives to the makers and have them retempered. A lot depends on the evenness of the temper in the knives as it is easy to understand that it is next to impossible to keep them in good shape if they are full of soft spots.

It would not do to always lay the blame for poor work to the steel in the knives. Often the fault lies with the operator of the machine. Some men will try and keep the knives in shape by using a file. It is a good policy to have the knives ground often rather than resort to a file or excessive use of whetstone to keep them in working order.

In sanding veneered stock a lot of work is often scrapped because the sander cut through the face veneers. These veneers run from 1/16 to 1/20 in. thick and if the cores had been prepared on a planer with the knives in poor shape, what else could one expect. The sander is not always to blame. The wise foreman is the one who will see that every machine in his department turns out accurate work and thus increase rather than decrease the production in other departments.

Australia Purchases Reed or Fibre Loom

A one-armed man operating the newly-invented Lloyd loom so impressed the Hon. G. M. C. McNeillage, member of the Australian legislature, during a trip through The Lloyd Manufacturing Company's plant, that arrangements were completed by

cable whereby the Australian government pays \$250,000 for rights to use the machine, as well as Lloyd's new method of production. They will only be used in giving employment to returned and crippled soldiers and sailors.

The Lloyd loom is the first mechanical device ever made which will weave reed or fiber for baby carriages, furniture or baskets. It will weave these fabrics thirty times faster than the most skilled hand-worker can and with much greater perfection.

A machine is now enroute to Australia. More will follow soon and a large factory will be built in which returning heroes will be employed. The facts that physically deficient men can do the weaving on the Lloyd loom instead of the most efficient hand workers, and that Australia is doing everything possible to aid its wounded prompted the expenditure of one-quarter of a million dollars for a single machine.

Increased the Output and Reduced the Cost

The value of training employees for any work other than the lowest form of unskilled labor has been proven in actual practice. A training department should be on an economic basis—the argument being that you can, in a given period of days, devoted solely to training as against production, teach a man sufficient to enable him to turn out more work per day than if he lacked the training.

To compete successfully in the markets of the world, the manufacturers of this country must allow no other country to "put it over" them in the matter of production. Increased output at a reduced cost is possible by a properly-run training department, and the big manufacturers of other countries are devoting much time and thought on this question of training. If you can add only 10 to 15 per cent to the effectiveness of your workers by systematic training you will have lowered costs to assist in meeting foreign competition.

The United States Training Service says, in part: "Six general reasons account in the main for inefficiency in production. They are (1) power failure; (2) failure of equipment and repairs; (3) lack of instruction; (4) lack of training, (5) failure to supply material; (6) personal slacking. It will be seen that the employer alone is blamable if five of these six reasons continue operating to his disadvantage. Industrial training will disclose these errors and shortcomings of management while it simultaneously is increasing the skill and output of the individual worker."

Fruit Boxes May Advance

A report from B. C. states that owing to the advance in the price of lumber there is a strong probability of an increase in the price of boxes for the packing of fruit, according to an announcement made last month. At present the following are the quotations for boxes on both sides of the international line—apple boxes, 19c; pear boxes, 17c; peach crates, 3½ inch, 8¼c; 4-inch, 9¼c; 4½ inch, 10¼c; 5-inch celery crates per 100, \$18.70; 7-inch, \$20.75. Berry crates are selling at \$32.50 f.o.b. Okanagan points.

I desire to see in this country, the decent men strong and the strong men decent, and until we get that combination in pretty good shape, we are not going to be, by any means, as successful as we should be.—Theodore Roosevelt.



Receiving Your Order

--is not a mere matter of more business with us. To us it means another chance to prove the strength of our statements regarding our service. Your order will receive prompt and careful attention both in selection of stock and shipping to its destination. Whether your order is sent by mail, wire, telephone or your own personal visit you are assured of the same reliable service.

Let us know your needs for Veneers, Mahogany, American Black Walnut, Quartered Oak, Figured Quartered Gum and plain woods. Your satisfaction is assured.

Toronto Veneer Company

1100-1104 Queen St. West.

Toronto, Ontario

WALNUT and Quartered White Oak VENEERS AND LUMBER

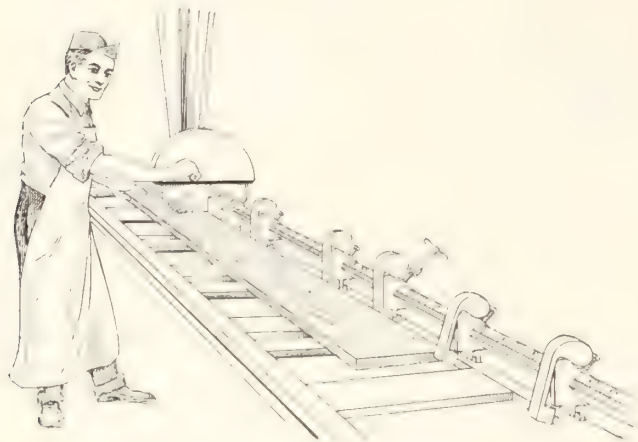
Prompt delivery

LONG-KNIGHT LUMBER COMPANY INDIANAPOLIS, IND.



Efficient Automatic Gauge for Swing Saws

That a simple automatic gauge for swing saws—one that is capable of doing perfectly accurate work—can be made to pay big dividends is demonstrated by the following figures. On the ordinary swing saw the operator works to marks made on the back of the saw table. Rather than run the risk of cutting the stock too short it is cut anywhere from one-quarter to a couple of inches longer than is required. Suppose that one thousand cuts are made in 12 in. stock in a



All steel Tannewitz saw gauge

day's run and that one-quarter inch is wasted on each cut, then with lumber at \$100.00 per M. the annual loss would be \$600.

The automatic saw gauge shown in the accompanying illustration is manufactured by The Tannerwitz Works, Grand Rapids, Mich., whose ad appears elsewhere in this issue and is being used to good advantage by a large number of wood manufacturers. It is of all steel construction and simple in operation. The operator sets the stops to the exact lengths required and allows the lumber to come in contact with the particular stop wanted, being well balanced the other stops readily swing out of the way. It is claimed that more work can be turned out when this gauge is used. Full information may be had from the above mentioned firm.

Fay & Egan Issue New Catalog

A new catalog illustrating and describing the "Lightning" line of woodworking machinery has just been issued by J. A. Fay & Egan Co. This catalog, No. 104 (1919 Edition) is published in a size that is very convenient for handy reference, and its 224 pages contain all the improvements made in woodworking machinery during the past year. It is really a textbook on woodworking machinery, and was evidently an expensive book to print. J. A. Fay & Egan Co. advise us, however, that they will be glad to send a copy, charges prepaid, to any owner or user of woodworking machinery, who will make request on his own or company's letterhead, as follows: J. A. Fay & Egan Co., 153-173 W Front St., Cincinnati, Ohio.

To impart an inspiration to others, a man must first feel it himself. It must become a part of the man. He must thoroughly believe in his proposition. He must be convinced, himself, that his product is useful, worthy and meritorious. The inspiration he gets enables him to convince others.

Enquiry for Poplar and Birch

Athlstan, P. Q.,

July 21, 1919.

Editor "Canadian Woodworker".

Will you please tell us where we can buy, in Canada, the following stock: White wood or poplar and a good grade of 6/4 in. birch.

Yours truly,

D. A. McDonald.

A large number of lumber advertisements appear in this journal, and no doubt many of these firms can supply your requirements. We would suggest that you go over these ads. and write a few of the lumber dealers and manufacturers.

How Do You Replace the Leather on Band Saw Wheels?

Aultsville, Ont.

August 2, 1919.

Editor "Canadian Woodworker".

Can you please tell me how to replace the leather facing on band saw wheels. We have a good cement that will hold on anything, but did not just know how to go about it. We will be grateful for any information that you may give.

Yours truly,

Fay & Rombough.

The usual practice is to replace the facing on small variety band saw wheels with rubber bands instead of leather. The rubber seems to wear longer and give greater satisfaction. The set of the teeth on the saw blade soon eats grooves in the leather facing, while the rubber springs under the tooth and emerges intact. The bands are made endless and are smaller than the wheels. The band and wheel is covered with cement and, when it is nearly dry the bands are sprung on the wheel. The same procedure is followed in putting on the leather facing. The facing is supplied by the maker in the form of an endless belt and is made a trifle smaller than the wheel, so that it will cling tightly to it when once in place.

Woodworking Conditions from Coast to Coast

The planing mill group have found business quieter in Nova Scotia and P. E. Island. The strike of the building trades in Halifax and vicinity had its effect in that district. In New Brunswick the sash, door and box men are all busy with an active demand for all lines of wood products. In Quebec the sash, door and planing mill group report that business is very active. The other groups enjoyed a good demand with the exception of the broom factories at Quebec. General woodworking conditions are good in Ontario, with a strong demand for most lines. The piano and organ men found business a little dull and a slight slackness in the box factories. The furniture group are very active and there is a slight shortage of skilled help. The planing mill group were all steadily employed. In the middle west there is a good demand for all lines of woodwork and the factories are running to capacity in most centres. The same hold true in B. C., with the exception of the Vancouver district, where labor troubles have greatly interfered with production.

When your cutters splinter the work rub a little off the face of the cutters at the point, so that the hook is less, but don't touch that part of a cutter that cuts down the side of a round or a hollow.



A Glimpse of Our Stock of Quartered Oak Veneer



**WRITE FOR SAMPLES
AND PRICES**

THIS is one of the alleys in our big Veneer Warehouse. It gives but a glimpse of the large stock of high grade Quartered Oak Veneer which we carry, and with which we are always prepared to meet the taste of the most exacting purchasers.

Note the uniform flatness of this Veneer. This is due to the fact that all of our Veneer is dried in a mechanical dryer. This means elimination of waste and less labor in laying the Veneer in your factory.

Our Oak Veneer is all made from selected Forked Leaf White Oak logs of fine grain and texture, showing excellent figure.

Concentrate Your Purchases and Save Money

Through Buying

Sliced Figured Red Gum, and Rotary Cut Gum Veneer.
Sawed and Sliced Ash, Poplar and Gum Grand Piano Rims.
Sawed and Sliced Quartered Oak.

In Cars with Band Sawed Hard Wood Lumber

Carload buyers get closer prices, save freight on local shipments, and eliminate damaged goods.

NICKEY BROTHERS, INC.

MEMPHIS, TENNESSEE

Newsy Jottings of Interest

The R. N. Tombyll Upholstering Co., Montreal, were recently registered.

The Montreal Store Fixtures Co., Montreal, Que., have recently been registered.

The Legare & Tremblay Carriage Manufacturers were recently registered at Quebec, P.Q.

The partnership known as the Mechanics Tool Case Mfg. Co., Toronto, has been dissolved.

P. A. Leclair, Eastview Centre, Ont., furniture manufacturer, recently disposed of his factory.

Chas. Rocilot, 290 Gigués Ave., Ottawa, Ont., is building a new paint shop at a cost of \$1,500.

The Canadian Waterproof Glue Co., Actonvale, Que., has been registered. A. P. Beaupre, proprietor.

The W. A. Gardiner Co., Thorold, Ont., manufacturers of baskets, recently sustained a loss by fire.

The partnership carried on under the name of the Milton Shipbuilding Co., Yarmouth, N.S., has been dissolved.

The sawmill of the Leclaire Shipbuilding Company at St. Joseph de Sorel, P.Q., has been destroyed by fire.

Three River Ship Yards Co., are constructing a new machine shop. This building is of frame and brick construction.

The Board of Control of Hamilton have decided to make a charge in future of \$1.00 per \$1,000 for building permits.

There are 100 houses being built at Oshawa, Ont., under the housing scheme. Oshawa's share of the loan was \$300,000.

Ottawa has adopted the housing scheme and will receive a loan of \$750,000 for this purpose during the present year.

The Alaska Bedding Co., Limited, Montreal, P.Q., have secured a site in Halifax, N.S., and propose erecting a factory.

The saw and planing mill belonging to the W. A. Hunting Co., Limited, Nassawippi, Ont., was recently destroyed by fire.

O. B. Meunier & Co., Montreal, manufacturers of show cases, has been dissolved, and J. O. Clement registered as proprietor.

The Dominion Government, department of public works, purposes to erect an orthopedic factory and garage at Halifax, N.S.

The Normandin Prance & Co., Montreal, manufacturers of brushes, have been dissolved and J. B. Normandin registered as proprietor.

L. G. St. Jean Compagnie, Limitee, Montreal, P.Q., have been incorporated to manufacture and deal in furniture of all kinds. Capital \$100,000.

In Vancouver 376 war veterans or their dependents have applied for homes under the new Act. The average value will run from \$2,650 to \$2,800.

Eighty municipalities in Ontario, requiring loans ranging from \$20,000 to \$1,000,000, have taken advantage of the government's housing scheme.

The Preston Furniture Co., Limited, Preston, Ont., was recently incorporated to manufacture and deal in goods, wares and merchandise; capital \$100,000.

At a recent meeting of the city council of Fort William, Ont., the housing by-law was passed. The city's share of the government's loan will be \$250,000.

D. Sweeney, Yarmouth, N.S., is building a 150 ton schooner, and McLean & McKay, Central Economy, N. S., have commenced work on a wooden ship.

Canadian Western Cordage Co., Vancouver, B.C., are planning to erect a factory at New Westminster to manufacture wooden pulleys, binder twine, etc.

The city council of Halifax, N.S., are planning to construct an aircraft station. A list of available sites has been made out, from which a choice will be made.

Midland Woodworkers, Limited, Midland, Ont., have been granted a Provincial Charter to carry on business in Ontario, capital used not to exceed \$366,000.

The Canadian Aero Film Co., Limited, Hamilton, have been incorporated to manufacture and deal in aeroplanes and aerial craft of all kinds. Capital \$100,000.

The saw and shingle mill belonging to E. Leuck, Dor-noch, Ont., was completely destroyed by fire. The loss is estimated at \$4,000. The owner intends rebuilding.

The program of the Toronto Housing Commission has been reduced to 200 houses this season, owing to the fact that the necessary applicants are not coming forward.

N. H. Gray, flour and grist mill owner, Eden, Ont., contemplates manufacturing a line of clothes pins and small handles and is in the market for the required machinery.

The Snyder Desk & Table Co., Limited, Waterloo, Ont., are building a new Sidman dry kiln. It is expected that other improvements will be undertaken in the near future.

Wilson Motor Body Co., Limited, Toronto, Ont., have been incorporated to manufacture and deal in automobiles, trucks, aeroplanes and vehicles of all kinds. Capital \$40,000.

The woodworking plant of Cargill, Limited, Cargill, Ont., is shut down due to the shortage of skilled operators. They expect to resume production about the first of the year.

The Goderich Mercantile Co., Limited, Goderich, Ont., were recently incorporated to manufacture and deal in baby-carriages, go-carts, toys and furniture of all kinds. Capital \$40,000.

Canadian Steering Wheel Co., Limited, Toronto, Ont., have been incorporated to manufacture and deal in automobile accessories and all products of wood and metal. Capital \$50,000.

Chase Tractors Corporation, Limited, Toronto, Ont., have been incorporated to manufacture and deal in lumber, and to carry on the business of woodworkers; capital \$2,000,000.

The Motor Mart of Montreal, Limited, Montreal, Que., has been incorporated to manufacture and deal in automobiles, trucks, carriages and agricultural implements. Capital \$100,000.

The Scotia Shipbuilding Co., Yarmouth, N.S., was recently formed. The partners are E. B. Ehr Gott, E. G. Baker, S. E. O'Brien, G. M. Goudey, G. C. Brown and H. K. Lewis.

Clovis Naud, La Chevrotiere, Terrebonne Co., Que., contemplates the erection of a sawmill and is in the market for sawmill machinery, including planer, matcher and a steam power plant.

The Cosmopolitan Graphophone & Piano Co., Limited, Montreal, P.Q., has been incorporated to manufacture and deal in pianos, phonographs and other musical instruments. Capital \$10,000.

The following firms have been registered in Montreal: International Piano & Gramophone Co., The Minerva Lumber & Power Co., Reg., The Palm-o-phone, manufacturers of phonographs.

Hugh Doheny & Co., Limited, Montreal, P.Q., have been incorporated to acquire timber limits and to carry on the business of lumbermen, paper makers and woodworkers. Capital \$2,000,000.

The McDonald Toy Co., Denfield, Ont., are negotiating with the Listowel City Council with the idea of securing the old brewery building in Listowel and remodelling it to suit their requirements.

The sash and door factory of Clark & Francis narrowly escaped destruction when their sawmill was recently burned to the ground. That the factory was saved was due to the efforts of the firemen.

The saw and planing mill of George Pinkerton, Eagle Lake, Ont., was totally destroyed by fire. The equipment was all rendered useless. Owner plans rebuilding at an early date. Loss \$10,000.

The Cane Mola Co. of Canada, Limited, Montreal, P.Q., were recently incorporated. Among the powers granted this

What's a "Difference"—It's a Loss or a Win

When we reach for the dictionary and look up the meaning of the word Webster tells us that it is "the act or state of being unlike." So far so good, but naturally you want to know what it's all about. Here it is.

Have you a difference between the amount of your productive labor and the actual labor that you purchase? Have you an accurate method of finding out whether you have a difference or not? If you have it's a hundred chances to one that your plant is equipped with International Records. If you haven't—well, we would like to demonstrate how we can eliminate this heavy drag on your profits.



Here's an International Cost Recorder →

Here's a Fac-simile of a Job Card →

It's a simple method of keeping an accurate, unchangeable record of every job that is done in your plant—when the job was started, when it was finished, how much time was wasted by the workmen before starting on his next job. Do you see how valuable a record of this kind would be? Of course, you do. You can tell just how much labor was involved in a certain operation, thereby giving you an accurate basis on which to place your selling price. You can tell if the workman is wasting time—either while doing the work whether it takes him too long or not, or if he is idle between jobs.

Labor is costly and may be more so you really need a system of this kind. We have sold thousands of them, yes even by wire—by phone—by letter. It will pay you to investigate it.

E	Elapsed Time	CLOCK RECORD
		S 15 9 .2
	2.2	B 15 7 .0
		S 15 11.1
	1.9	B 15 9 .2
		S 15 12.0
	.9	B 15 11.1
		S 15 15.4
	3.4	B 15 12.0
		S 15 16.0
	.6	B 15 15.4

International Business Machines Co. Limited

WINNIPEG:

227 McDermott Ave.

VANCOUVER:

110 Water Street

(TIME RECORDER DIVISION)

Royce and Campbell Avenues, TORONTO

FRANK E. MUTTON,

Vice-President and General Manager

HAMILTON:

2 Empire Bldg.

MONTREAL:

Sales Office:

212 McGill Street

(Also Makers of Dayton Scales and Hollerith Electric Tabulators)

company under the charter were to manufacture and deal in barrels, boxes and other forms of packages and to operate sawmills, planing mills, box factories, and to deal in wood products of all kinds. Capital \$100,000.

The Provincial Machinery Supply Company, St. Thomas, Ont., have secured suitable premises in the Cameron Building, and are installing a plant to commence the manufacture of phonographs.

Legare Automobiles of Sorel, Limited, have been incorporated to manufacture and deal in automobiles, motor trucks, carriages, furniture, woodenware and musical instruments. Capital \$100,000.

It is expected that the French Government will place with some of the shipyards in British Columbia, additional orders for wooden vessels. The Foundation Company is certain of part of the order.

Frank Fales & Sons, Limited, St. John, N.B., have been incorporated to take over the business conducted by Frank Fales, and to carry on the business of boat builders, boat repairers, ship brokers, etc.

The Crossen Car Co., Limited, Cobourg, Ont., who formerly manufactured a line of sleeping, parlor and passenger cars, etc., have discontinued business. The plant has been completely dismantled.

Mavity Theatres, Limited, Toronto, Ont., were recently incorporated. Among the powers conferred on this company were to manufacture and deal in phonographs, pianos and player pianos. Capital \$100,000.

Any toy manufacturer or woodworker who wishes to investigate the manufacturing possibilities in a patented toy can secure full particulars from the Toy Dept., Room 119, Board of Trade Bldg., Montreal, P.Q.

Warren & Sons, Woodstock, Ont., who have been manufacturing church organs on a small scale, have applied to the City Council of Woodstock for assistance in erecting and equipping a modern organ factory.

Georges Vannier, architect, of Montreal, has secured a contract for 2,000 houses in the city of Soissons, 450 houses in the city of Grouy, and 200 houses in the city of Cuffies, France, and is in the market for materials.

Samuel May & Company, Limited, Toronto, Ont., have recently been incorporated for the purpose of manufacturing and dealing in billiard tables, bowling alleys, furniture and fixtures of every description. Capital \$100,000.

A. & C. Boehmer, box manufacturers, Kitchener, Ont., have awarded a contract for an addition to their factory. The new building will be two storey, brick construction, 95 x 50 ft., and will cost in the neighborhood of \$10,000.

The planing mill and box factory of Tier Bros., Fenelon Falls, Ont., was completely destroyed by fire. At one time the whole village was threatened but this danger was averted through the good work of the fire department.

Chas. H. Russell Co., Limited, Montreal, was recently incorporated to manufacture and deal in lumber, timber, and wood products of all kinds and to purchase or otherwise acquire timber lands and licenses; capital stock \$50,000.

Quinlan, Robertson & Hanin, Limited, Montreal, have been incorporated to deal in timber, lumber and building material, and to erect mills and factories suitable for the carrying on of the company's business. Capital \$500,000.

Beattie Bros., Fergus, Ont., are adding two new wings to their factory; one to be 144 x 96 and the other 192 x 96, saw tooth construction. Also a dry kiln 120 x 96 ft. Considerable new equipment will be installed. Cost about \$35,000.

Pure Cane Molasses Co. of Canada, Limited, Montreal, P.Q., were recently incorporated with power to manufacture and deal in barrels, boxes and packages and to acquire sawmills, planing mills, cooperages and box factories. Capital \$250,000.

Legare Automobiles of Three Rivers, Limited, Three Rivers, Que., have been incorporated to manufacture and deal in automobiles, trucks, carriages, agricultural implements, furniture and woodenware of all kinds. Capital stock \$100,000.

The H. A. T. Lumber Co., Limited, Montreal, P.Q., have been incorporated to manufacture and deal in lumber and timber of all kinds and to erect and operate sawmills and factories and to manufacture any article made of wood. Capital \$100,000.

It is learned that the order for 10,000 "knock down" houses which the Canadian Timber Products Association

was to receive some months ago from the French government, did not materialize, the high ocean freights rates killing the business.

J. M. Loose & Sons, Toronto, Ont., manufacturers of piano actions, expect to commence work shortly on a new four-storey factory. The new building will be of brick and stone construction, 55 ft. x 125 ft. Cost will be in the neighborhood of \$75,000.

The Onward Mfg. Co., Kitchener, Ont., manufacturers of the Onward Sliding Furniture Shoe, are preparing to build an addition to their factory. The new building will be three storey, brick construction, 40 x 50 ft. and it is expected to cost \$15,000.

Premier John Oliver of B. C. is interesting himself in the matter of the construction of the demountable ships. He is reported to have said that there should be no hesitation on the part of the B. C. mills to supply the timber for the construction of these peculiar craft.

The Republic Motor Truck Co., Alma, Mich., have purchased a plant in London, Ont., which they will refit and use temporarily for the manufacture of their line of trucks. The company have also acquired a ten-acre site and contemplate the erection of a large factory.

Rimouski Fishing & Cold Storage Co., Limited, Montreal, P.Q., were recently incorporated. Wide powers have been granted this company under their charter, among which are to operate factories of all kinds and to build and operate ships and vessels. Capital \$50,000.

The Globe Furniture & Mfg. Co., Limited, Waterloo, Ont., have just completed a large contract for supplying the pews, altar, etc., for the St. Dunstons Cathedral, Charlottetown, P.E.I. This firm also supplied the pews and fittings for the new church at Apple Hill, Ont.

W. A. Moore, formerly with the W. A. Moore Co., Limited, Meaford, Ont., manufacturers of wood mantels, has recently acquired a plant at 11 St. Albans St., Toronto, and will continue the manufacture of mantels in addition to carrying on a general woodworking business.

The St. Omer Lumber, Limited, Quebec, recently incorporated to manufacture and deal in lumber, pulpwood and wood products, and to acquire and hold timber limits and timber leases; capital \$70,000. Alfred P. Boisseau, lumber merchant, is one of the incorporators.

The American Import, Limited, was recently incorporated, with head office at Montreal. Among the powers granted under this charter are to purchase or lease timber limits or licenses and to manufacture and deal in lumber, pulpwood or any article made of wood; capital \$20,000.

Canadian Aero Co., Limited, Brantford, Ont., have been incorporated to manufacture and deal in aeroplanes and other forms of aircraft on a commercial scale and to carry passengers, mails, express, for hire between points and places within or without the Dominion. Capital \$50,000.

John B. Smith & Sons, Toronto, have bought 144 sq. miles of timber limits from the Ontario government. The holdings are in McNish, Charlton, McCallum and Sturgeon townships. The timber is principally white and Norway pine and the company intend to start logging operations this fall.

H. H. Stevens, one of the B. C. members of the Federal House, stated in an interview recently that the government would continue the construction of ships, but not on such a scale as during the last few years. He said that \$10,000,000 had recently been voted for additional vessels.

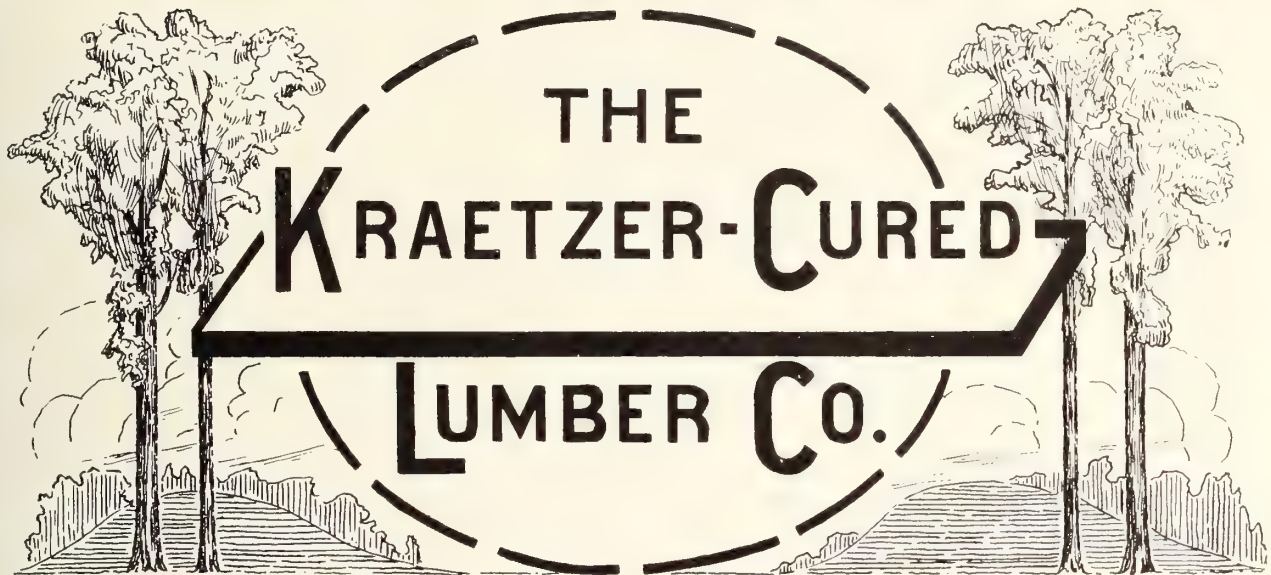
Among the companies recently incorporated in Saskatchewan were the Aerial Service Co., Limited, Regina, Sask.; capital \$20,000. The Paskwegun Lumber Co., Limited, Paskwegun, Sask.; capital \$20,000; and the Battleford Aviation Co., Limited, North Battleford, Sask.; capital \$10,000.

High prices were realized at the recent sale of government timber limits. These limits were situated along the north shores of the Great Lakes and one berth brought the unusual price of \$22.50 per thousand feet on the stump, while several others were sold at \$20.00 per thousand on the stump.

The Elgin Handle Co., St. Thomas, Ont., are going after the export trade in fine style. At present they are filling orders from South Africa and Australia, and have prepared sample handles for the British market. They report that they cannot keep up with all the business that is offered.

Representatives of the Bureau Veritas and the French Government were present at the official endurance trials of Hull No. 207, which were recently carried out at Williams-head, B.C. The engines worked perfectly and the officials

HARDWOOD LUMBER



General Offices - Greenwood, Miss., U.S.A.

Our Endeavor is to Make
This Brand Synonymous with Quality

*It is Your GUARANTEE—
Our Mutual PROTECTION*

***We want your BUSINESS, but your
GOOD WILL is more valuable and
we can't keep one without the other.***

Manufacturers Exclusively

BAND MILLS:

GREENWOOD, MISS.

MOORHEAD, MISS.

were well pleased with the small amount of vibration and the beautiful way in which the craft cut through the water. The No. 207 is the first of twenty steamers being constructed for the French Government to be completed by the Foundation Co., Victoria, B.C.

Harry J. Strong, Limited, Toronto, has been incorporated to engage in the lumber business in all its branches, to acquire timber limits and licenses and to erect lumber mills, sawmills or other woodworking plants for the manufacture of lumber and wood in any form. Capital \$30,000.

A building boom is on in Brantford, Ont. Permits have already been issued for 126 homes and there are over 100 applications for loans from the housing commission in addition. To date \$377,000 in permits have been issued, which is more than the total for the years 1916 and 1917 combined.

The Waterloo Spring Co., Waterloo, Ont., manufacturers of upholstering springs, are building a new factory, 36 x 84 ft., and will install the latest equipment for the manufacture of upholstering springs. When the new plant is complete this firm will be able to handle a large volume of business.

The piano makers' union, who have been negotiating with the various piano and organ firms in this city, have secured a substantial increase in wages and better working conditions. This union is practically a new one and in a few months the membership has reached a total of 800 members.

The figures given out by the City Architect, Toronto, show that Toronto has done more building in the first seven months of this year than in any full year since 1914. The total for 1914 was \$20,694,000, and the first six months \$13,800,000; for the first seven months of 1919 the figures are \$8,518,000.

The International Coal & Coke Co., Limited, Coleman, Alta., were recently granted a Dominion Charter. Wide powers have been conferred on this company. Among others to construct and operate steamers and vessels of all kinds and to build sawmills, woodworking factories, etc.; capital stock \$3,000,000.

Carrying out its policy of providing good housing accommodation for its employees, the Laurentide Co., Limited, is building three houses, of eight rooms each, at the logging headquarters at La Tuque. One is for Mr. B. Baxter, the assistant superintendent of La Tuque, and the other two for members of his staff.

Premier Paper Products, Limited, Sarnia, have been incorporated to manufacture and deal in paper made from any material, including manufactures of pulp, straw board and other similar products. Also to manufacture and deal in lumber, boxes, barrels, and all other articles manufactured from wood. Capital \$50,000.

Great Lakes Paper Co., Limited, Fort William, Ont., were recently granted a charter to carry on the business of manufacturers of and dealers in pulp, paper and other products; to construct and operate pulp and paper mills and to buy, sell and deal in pulpwood, timber, lumber and all forest products. Capital \$8,000,000.

The Kalbfleisch Planing Mill at Stratford, Ont., was recently reorganized and incorporated under the name of the Wattman-Kalbfleisch Car Body Co., Limited, Stratford, Ont. They will manufacture a line of hearses, sedans, service wagons and bodies of all kinds. Mr. Wattman formerly manufactured a similar line in Toronto.

The McGibbon Lumber Co., Penetanguishene, Ont., which was recently incorporated with a capital stock of \$100,000 fully paid up, has elected the following officers: President, Archie McGibbon; vice-president, Norman McGibbon; and secretary-treasurer, Finlay McGibbon; directors, Archie, Norman, Finlay, John and O. D. McGibbon.

North American Fiscal Corp., Limited, Toronto, have recently been incorporated. Among the powers conferred on this company are to acquire timber limits or licenses and to manufacture and deal in lumber, logs, pulpwood, or any article made in whole or in part from wood; also to construct, repair or acquire vessels, boats, tugs, etc. Capital \$50,000.

The Great West Lumber Mills, Limited, have been granted a provincial charter with headquarters in Winnipeg and a capital stock of \$100,000. Among the incorporators are Wm. P. Dutton and Geo. U. Bacon, lumbermen; John W. Brown, traveller, and others. The company are em-

powered to manufacture and deal in lumber, timber and wood products of all kinds.

Phoenix Construction Co., Limited, Montreal, P.Q., were recently incorporated. Wide powers were conferred on this company under the charter, such as to manufacture and deal in woodworking tools and machinery, railway cars, automobiles and all articles made in whole or in part of wood, and to build and repair vessels, tugs and barges of all descriptions. Capital \$100,000.

The Arnprior Cabinet Co., Limited, Arnprior, Ont., are making a large addition to their plant and new machinery and equipment will be installed. This extension is primarily to take care of their export business. Mr. Simpson, the managing director, recently returned from a business trip to Britain and while there not only made extended trade connections but secured a number of good sized orders.

"I am of the opinion that these are the best wooden steamers yet built in Canada or in the United States." That was the tribute paid to the work of the Foundation Company of British Columbia, Limited, by Capt. T. Tristan, Inspector for the French High Commission, who inspected the 3,000 ton wooden steamships under construction by the Company at Victoria to the order of the French Government.

It is expected that the City Council of New Westminster, B.C., will shortly commence work on its housing programme. A workable scheme has been evolved and submitted to the Provincial Government and it is not expected there will be any further delay in carrying out this work. At present there are thirty applicants for loans and it is anticipated that this number will be increased as soon as construction commences.

Two of the leading manufacturing concerns of Chatham, Ont., the Gray-Dort Automobile Co., and the Wm. Gray & Sons, Campbell Co., are amalgamating. Robt. Gray, who is president of both of these companies, will head the new company. It is the intention to devote the entire three plants of the new company to the manufacture of Gray-Dort cars. The Wm. Gray & Sons Campbell Co. manufactured carriages, scales and fanning-mills.


A carload of aeroplanes arrived in Vancouver recently and were disposed of at short notice. It was the intention to fit these machines with pontoons, but owing to the unexpected demand they were all disposed of as land machines. In this connection, a Chicago automobile dealer, who recently added aeroplanes to his line, reports that he sold forty planes during the first week. These planes were formerly used in the training of Canadian flyers.

Parks Commissioner Chambers is investigating the proposition of Mayor Church of Toronto, that the Parks Commission manufacture benches and chairs for the Exhibition and other city parks. So far nothing definite has been decided on, but should the commission decide to go ahead with the project it would be necessary for them to purchase and install considerable equipment. In that event it is likely that the new factory would be located in one of the Exhibition buildings.

A small fire recently occurred in the plant of the Marshall Ventilated Mattress Co., Toronto, Ont. The origin of the fire is unknown. The outbreak occurred on the fifth floor of the building and before anything could be done had gained considerable headway. Good work on the part of the firemen, who were handicapped by the dense smoke, prevented the fire from assuming large proportions. Damage to the building is estimated at \$10,000, and to the contents at \$7,000. The loss is fully covered by insurance.

At a recent meeting of the furniture section of the Canadian Manufacturers' Association it was decided to increase furniture prices from 10 to 20 per cent. The large increase to apply to pieces in which the mirror forms an important part. Increased cost of labor and material is the reason given for this advance. As an instance, shellac which was selling three months ago at \$4.40 per gallon is now quoted at \$6.60, an advance of \$2.20. A pane of glass costing seven cents in 1914 increased to 37c during the war and is now quoted at 50c.

It has been definitely announced that the Poplar Island Ship Yard, carried on by the Westminster Construction & Engineering, Limited, has been permanently closed. Some time ago a report was circulated to the effect that this yard had been closed temporarily, and that as soon as certain details had been adjusted with the Imperial Munitions Board the Westminster Construction & Engineering, Limited, would go after additional orders. Mr. Fullerton, secretary-



We Are Doing Everything Possible To Meet Demand

Supply and demand for hardwoods are equally beyond human control. The causes are obvious to the experienced. May we state though that while even our vast organization has fallen short of complete success in meeting the issue, we are doing everything humanly possible to speed up; we are even enlarging our facilities in order to more fully live up to our reputation as

Exponents of the Golden Rule in Business.

Anderson-Tully Co.

MEMPHIS,
TENN.

treasurer of the company, states that the company is offering all its plant for sale and the arbitration proceedings taking place between it and the Imperial Munitions Board is merely to determine how much money is owing between the company and the Board and by whom.

The chair factory formerly operated by the Preston Chair Company has been sold to the Canada Last Co., of Toronto. The Preston Chair Co., which has been in liquidation, was indebted to the city of Preston and under the new agreement with the Canada Last Company the city does not stand to make any loss. The Canada Last Co. are manufacturers of a line of wooden shoe lasts and trees and have been in business for twenty years. To date this company has been buying the blocks for their product, but it is their intention to erect a sawmill and break out their own stock.

The Valley City Seating Co., Limited, of Dundas, Ont., have just made shipment to South Africa of the complete pews and furniture for a large church in the town of Potchefstroom, Transvaal Colony. This work was built entirely of solid straight grained oak, and in the selection made, it was easily seen that the South African people are not at all backward in their appreciation of correct design. Although freight rates are still very high, it is believed that this company, who have specialized in this work for over thirty years, will soon open up a large export trade with this sister Dominion.

The Carriage Factories, Limited, recently moved their head office from Toronto to Orillia. The Toronto office was opened about a year and a half ago, but it was found more convenient to have their headquarters in the latter city. The Carriage Factories, Limited, includes the Tudhope Carriage Co., Orillia; Heney Carriage and Harness Co., Limited, Montreal; Munro & McIntosh Carriage Co., Limited, Alexandria; and the Canada Carriage Co., Limited, Brockville. The factory at Brockville was burned, and has not been operating for some time. Mr. W. H. Tudhope is president of the company.

In order to keep pace with the growing demand for their products, the Robertson Hackett Saw Mills, Limited, Vancouver, B.C., are constructing a new planing mill, 100 x 100 ft. The building will be one storey in height with what is known as a truss roof. The construction of this roof will be such that its weight will be supported by posts, leaving a 56 ft. span in the centre of the mill where the machinery will be located. The equipment will consist of 5 planers and matchers; 2 rip saws and a band resaw for bevel siding. Individual electric drive will be used throughout. Last year this firm constructed a 40 x 120 ft. North Coast dry kiln.

The City Council of Winnipeg are working on a very extensive housing scheme. It was proposed to spend at least \$2,000,000 this year and the scheme embraces the erection of between 3,000 and 4,000 houses. At a recent meeting it was urged that this work be undertaken at once so that no time may be lost and fullest advantage taken of the balance of the present building season. It is proposed to finance this scheme by collecting 10 per cent. of the total cost from the prospective purchasers and placing a mortgage for 60 per cent. with the regular mortgage of 30 per cent. company and to finance a second mortgage of 30 per cent. with funds obtained from the Dominion, Provincial and civic governments and other sources.

Personal Items

L. Henderson, of James Davidson's Sons, Ottawa, was on a recent business visit to Montreal.

Jas. D. McCormack, general manager of the Canadian Western Lumber Co., Fraser Mills, B.C., spent a short time in Toronto recently on his return from a visit to his boyhood home in Prince Edward Island.

H. J. Hall, of H. J. Hall & Sons, who conduct a general planing-mill business at Kitchener, Ont., is spending a well-earned vacation in the Muskoka district.

George Gordon, Napanee, Ont., died recently after a long illness. Mr. Gordon was connected with the Gibbard Furniture Co., Limited, and was a prominent worker in the Methodist church and the Masonic order.

Alfred Mitchell recently passed away at his home in Powassan, Ont. Mr. Mitchell, at one time, owned several sawmills, but latterly he devoted all his attention to his sawmill and sash and door factory at Powassan. He served at

different times on the Township Council and the Town Council, and at the time of his death was a member of the School Board.

Albert Vickers died recently at Eastbourne, England. Mr. Vickers was chairman of Vickers, Limited, who are one of Britain's largest manufacturers of steel products and aeroplanes. The Vickers, Limited, have also a large plant in Canada.

D. G. Steinman, who was a partner in the B. & N. Planing Mill Co., Milverton, Ont., died recently. He had retired, apparently in the best of health, and during the night passed quietly away. Mr. Steinman was one of the most highly esteemed citizens of Milverton.

Clarence Hyde and C. O. Maus, of the Hyde Lumber Co., South Bend, Ind., and Chas. Hyde, of Lake Providence, La., have been on an angling expedition in the Bruce Peninsula. The party met with splendid luck and are loud in their praises of the black bass fishing qualities of the Georgian Bay waters.

I. H. Boas, Chief of the Forest Product Laboratories of the forest department of Australia, was in Montreal recently. Mr. Boas has visited all the large centres in the United States and Canada and made a study of the methods and practices used by the woodworking industries. He evinced great interest in the Forest Product Laboratories in Madison, Wis., and Montreal. The Australian Government are formulating extensive plans to assist the woodworking industry and are perfecting plans for erecting and equipping a modern Forest Product Laboratory. This government has also undertaken the work of planting the vast sand areas of Australia with pulpwood trees.

Lieut.-Col. John A. Cooper, of Toronto, who went overseas in command of the 198th Canadian Buffs, saw service in France and later attained the position of transportation officer of the 5th infantry brigade, has gone to New York. There he will have charge of the Publicity Bureau which is being opened by the Dominion Government. For some time past it has been felt that Canada's interest in the United States had reached the stage where it required careful and well organized attention. The new Bureau will furnish all the information in the progress and development of Canada along commercial, industrial, financial and agricultural lines, and will be a prominent source of information for United States News Agency, publishers, etc. Col. Cooper is past president of the Canadian Press Association, and is widely known in newspaper ranks.

National Dry Kiln House Organ

The "Spokesman" is the name of a bi-monthly paper published by the National Dry Kiln Company of Indianapolis.

In the current issue a list of some of the recent purchasers of "National" kilns is given and includes the following: St. Louis Manufacturing Corporation, St. Louis, 21 compartments; Ford Motor Company, Detroit, 5 batteries (24 rooms in all); Chevrolet plant at Oshawa, Ont., 1 battery; Brunswick-Balke-Collender Company, Rockford, Ill., 1 battery, and a long list of others.

Falls Veneer Jointer in the Williams Plant

In the write-up of the Williams Piano Co.'s plant, which appeared in the last issue of this journal, reference was made to a "Balls" Veneer Jointer. This should have read "Falls" Veneer Jointer. This jointer is manufactured by the Jenkins Machine Co. of Sheboygan, Wis. The Garlock-Walker Machinery Co., Limited, Toronto, handle this machine in Canada.

One step won't take you very far, you've got to keep on walking. One word don't tell folks who you are, you've got to keep on talking. One inch won't make you very tall, you've got to keep on growing. One little ad won't do it all, you've got to keep them going.

Mississippi Delta

Gum

Quartered and Plain
Red and Sap

Oak

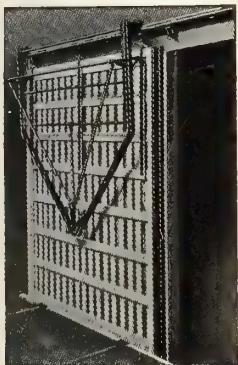
Quartered and Plain
Red and White



The
KORN-CONKLING Co.
CINCINNATI, OHIO

Mills; Percy, Mississippi

The Door Carrier System



**Makes your dry-kiln doors
steam-tight and saves time,
heat, trouble and money.**

Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbeted joint, where it is held steam-tight by its own weight. Applicable to old or new kilns.

Ask for catalogue.

**DRY KILN
DOOR CARRIER CO.**

1117 Cornell Ave.
INDIANAPOLIS, IND.

Subscribe for the
Canadian Woodworker
and
Furniture Manufacturer
Only \$1.00 per year

"WELL BOUGHT IS HALF SOLD"

Please read following
List of

Hardwoods

and Let's Quote

- 1 Car 1" No. 1 Com. and Btr. Soft Elm.
- 2 Cars 1" Elm Crating.
- 2 " 2" No. 1 Com. and Btr. Hard Maple.
- 3 " 3" No. 1 Com. and Btr. Hard Maple.
- 1 " 4" No. 1 Com. and Btr. Hard Maple.
- 1 " 4" No. 1 Com. and Btr. Birch.
- 3 " 1" No. 3 Com. and Btr. Birch.
- 2 " 1" No. 3 Com. and Btr. Basswood.

Can also furnish $\frac{1}{2}$ ", $\frac{5}{8}$ " and 1" Spruce Crating.

**Canadian General Lumber
Company, Limited**

712 Bank of Hamilton Bldg.

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MONTREAL OFFICE: 203 McGill Bldg.

Selling

Graves, Bigwood & Co.'s
Lumber, Lath and Box Shooks

DU PONT CANADIAN INDUSTRIES



“FLINT” Service

We know that the furniture manufacturer is faced every day with varnish problems that require technical service and advice and to that end we have perfected a service department that we are sure can be of immense assistance to you in your particular line.

Our service men know the varnish business thoroughly and take a personal interest in any problems that you may be pleased to submit.

Our varnish plant in Toronto is the largest and most modernly equipped in the Dominion and fully equipped to take care of your every need.

Get in touch with us

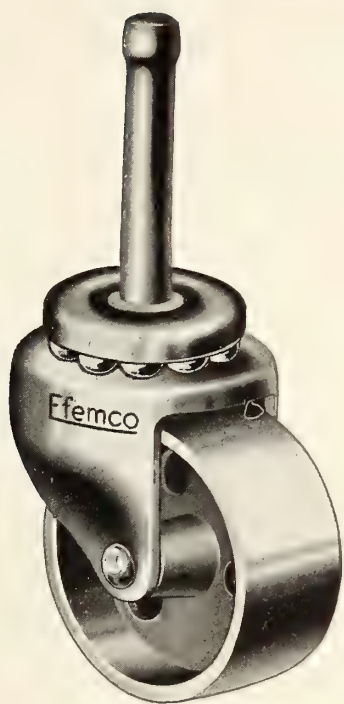
The Flint Varnish and Color Works
of Canada Limited

63 Bay St.



TORONTO





An
Efemco
Product

Gives Furniture Greatest Utility

Equip your furniture with Efemco Acme Ball Bearing Casters for greatest utility. They add positive portability and good looks at the same time. Made to swivel readily and easily, and rugged enough for all demands.

Efemco Acme Ball Bearing Casters are made with the same conscientious attention to detail that Foster, Merriam & Co., observe in the making of all Efemco Casters.

The new flat top prevents balls binding or falling out.

Sizes three, four, five, six and seven. Period trimming for all styles and grades of furniture.

*Write for complete catalogue and "Special" folder of newest
Efemco Casters.*

FOSTER, MERRIAM AND Co.

Hamilton, Ontario.

Meriden, Conn.

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Efemco Products

Grip Neck Casters
Ball Bearing Casters
Roller Bearing Casters

Truck Casters
Furniture Trimmings
Automobile Accessories

Piston Rings
Cast Aluminum Ware
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*Standardized by
84 years of service*

Efemco Products

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WANTED

Two Cut-off Saw men, also one man capable of taking charge of Furniture Department in Woodworking plant.

J. R. Eaton & Sons, Limited,
7-8 Orillia, Ont.

FOR SALE

Two storey Brick Factory Building with or without power and machinery; also Dry Kiln and store house, located on large lot convenient to two railways. Particulars on application. Address Box 949, Owen Sound, Ont. t.f.

FOR SALE

- 1 10" 4 side Moulder.
 - 1 12" 4 side Moulder.
 - 1 Chain Saw Mortiser.
 - 1 Sash Relisher and Mortiser.
 - 1 24" Surface Planer.
 - 1 Double Cope Tenoning Machine.
 - 2 8 x 26" Morgan Nailers, open back.
- THE MAYDWELL MFG. CO.,
8 65 Saulter Street, Toronto.

BIRCH DOWELS

Firm of Liverpool Timber Merchants would be pleased to get into touch with a Canadian firm manufacturing Birch Dowels, with a view to handling their output in England. Box 64, Canadian Woodworker, Toronto. 8

Machinery For Sale

- 1—Yates No. 177 30 x 12 Double Sur-facer, with round cylinders, jointer and power cylinder grinder, in A-1 condition.
- 1—Fay & Egan No. 217 Continuous Feed Glue Jointer with 2 set Shimer Heads; 1 set Square Jointing Heads; 1 set Tongue and Groove Heads. Machine new, was installed but never operated.
- 1—6" Linderman Glue Jointer and Matcher in A-1 condition.

The above machines are real bargains, subject to inspection.

Box 400, Canadian Woodworker, 119 Board of Trade Bldg., Montreal. 8

FOR SALE OR RENT

Sash and Door Factory and Sawmill. All complete with plant, in good condition; railroad sidings and water for shipping right to yard. Will sell plant separate or bulk.

8-9 ROSS & CO., Cornwall, Ont.

FOR SALE

Planing Mill, Sash and Door Factory, the property of the late Geo. Ingle, Esq., Lindsay. Good going concern. In order to wind up the estate, the property must be sold. For further information apply to

THE INGLE PLANING MILL,
Lindsay, Ont.

A South American Pest

Furniture makers must poison all woods with a chemical poison that will withstand kiln drying, if they expect to cater to the wants of the people of South America. This is the purport of a bulletin issued recently by the United States Department of Commerce. This is necessary to thwart the ravages of the termite, which feasts on all woods that appeal to its taste. The hardness of the wood makes no difference to the little six-legged creature, which begins eating wood shortly after being hatched.

The termite works secretly, burrowing with the grain, and leaving only a thin shell on the outside. Often its presence is not noted until some person takes hold of a chair, the top of a desk or the panel of a bureau and the object crunches like an egg shell. No varnish protects. The only woods that escape destruction are the Spanish cedar, resinous Georgia pine, and others that contain a substance disagreeable to the taste of the termite.

Cut Old Man Worry

If a man is inclined to worry, there are sure to be plenty of things to worry about. But what's the use? Worry never helps and it always lessens one's efficiency and power to remedy the condition which has proved unwise; do the best you can now and let the experience count for your future guidance.

Don't overbuy, for that means worry when pay day comes. Don't neglect business building methods, for that means the other fellow will get your customers one by one. Don't go security for anybody. That's what bonding companies are for. Don't take risks unless you can afford to lose—not many of us can. Play safe and cut out Old Man Worry!

Sanding Machines Cut Cost

Sanding is an important item in the cost of a chair, and sanding machines do much to confine this cost in reasonable limits. For the average chair factory the endless-bed sander is found to be of extreme value. This takes care of a very great amount of work; and, as both the slightly yielding bed surface and the drums can be adjusted with the finest precision, it handles the most delicate work in an almost perfect way. The belt sander should be used only on curved surfaces, as it is slower and far more expensive than the bed sander. There is no reason why stock should be hand-sanded until after being completely assembled.

FOR SALE

Battery of "Bowser" Tanks for Finish Room. Good Condition.

t.f. Box 32, Canadian Woodworker

PETRIE'S LIST

of NEW and USED
WOOD TOOLS
FOR IMMEDIATE DELIVERY

Wood Lathes

- 20" Sidney, "Famous."
- 16" Cowan.
- 16" Sidney, "Famous."

Wood Planers

- 26" Double surfacer, divided rolls.
- 24" Champion planers and matchers, moulding attachment (2).
- 24" Galt, planer and matcher.
- 24" Hermance, double surfacer.
- 24" MacGregor-Gourlay.
- 24" Sidney, "Famous," single surfacer.
- 24" Crescent, single surfacer.
- 18" Sidney, Famous.
- 12" buzz, with slotted head (2).
- 12" Petrie buzz planers, with safety heads (6)

Band Saws

- 60" Fay & Egan, band re-saw.
- 36" Famous, pedestal.
- 30" Cowan, bracket.

Saw Tables

- No. 6 Famous, variety.
- No. 5 Famous, combination.
- No. 4 Famous, combination.
- Galt, iron frame, cut off.
- MacGregor Gourlay railway cut-off.
- No. 1 Greenlee automatic cross-cut.
- 7" Williams, swing saw.
- Canadian, steel frame, pole saw.
- Vaughan, portable, drag saw.
- Champion, portable drag saw.

Mortisers

- Cowan, upright, power.
- Galt upright, compound table.
- No. 1 Smart, foot power.
- No. 2 Osborne-Baker, foot power.

Moulders

- 13" Clark-Demill four-side.
- 12" Cowan four side.
- 12" Woods four-side, inside.
- 8" Dundas four-side.
- 6" Dundas sash sticker.

Clothespin Machinery

- Humphrey automatic lathes (5)
- Humphrey double slotters (3)

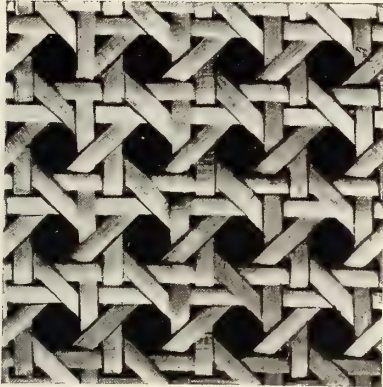
Miscellaneous

- No. 30 Famous, universal woodworker.
- Fay, horizontal, boring machine.
- No. 7 Sidney, post boring machine.
- No. 2 Defiance, belt sander.
- Fay & Egan 12 spindle dovetailer.
- MacGregor Gourlay 12 spindle dovetailer.
- No. M 120 Cowan, panel raiser.
- 20" American, wood scraper.
- Dundas, wood frame tenon machine.
- Fay, iron frame, double head, tenon machine
- Cowan, veneer press, screw.
- No. 2 Reynolds, power screw driver.
- Hall's automatic shingle machine.
- Waterous lath machine.
- 28" Dominion lath trimmer.
- 6" Linderman, automatic, glue jointer.
- No. 3 Defiance, rim & fellow rounder.
- No. 1 Defiance, axle shaper.
- No. 1 Defiance, spoke driver.

Ask to see our large stock of used supplies—belting, pulleys, machine shop equipment, mill supplies, pipe and fittings. This material is as good as new, and can be bought at greatly reduced prices.

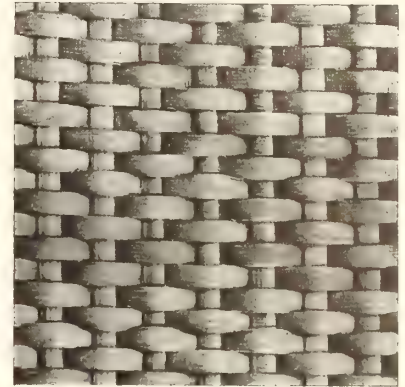
H. W. PETRIE, LTD.
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Rattan and Cane Products



Fine Fine Open Cane Webbing 7-16 in. Mesh

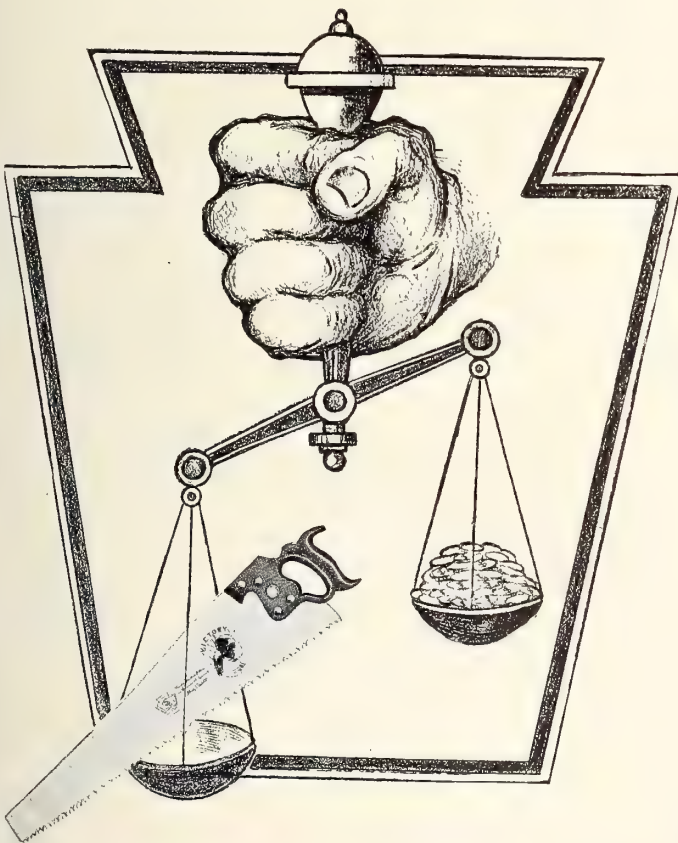
"Importers of Rattan and Manufacturers of Open and Closed Woven Webbing, Chair Cane, Binding Cane, and all kinds of Reeds."



Medium Close Woven Cane Webbing

SEND FOR PRICES AND SAMPLES

Overseas Reed & Cane Company
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Worth many times its cost

HENRY DISSTON & SONS
 INCORPORATED

Keystone Saw, Tool, Steel and File Works
 PHILADELPHIA, U. S. A.





For Better Work and Greater Service "Maple Leaf" Grooving Saws

From our complete line of guaranteed saws we can meet your needs for special shaped tooth grooving saws in round face, bevel face, shear cut, straight face, etc. Write for catalog and further information regarding our other manufactures, including Dado Heads, Mitre Saws, Novelty Saws, Rip and Cross-Cut Circular Saws, Concave Saws, Band Saws, Hand Saws, Cross-Cut Saws, etc.

Shurly-Dietrich Co., Limited, Galt, Canada Branches — Vancouver, B.C., and 306-308 Wellington Street, Ottawa

Subscribers' Information Form

Many letters reach us from subscribers enquiring where a certain machine, a certain kind of lumber or veneer, or some other class of goods, can be obtained. We can usually supply the information. We want to be of service to our subscribers in this way, and we desire to encourage requests for such information. Make use of this form for the purpose.

Date.....191

CANADIAN WOODWORKER
AND FURNITURE MANUFACTURER,
345 Adelaide Street West, Toronto.

Please tell us where we can procure

.....

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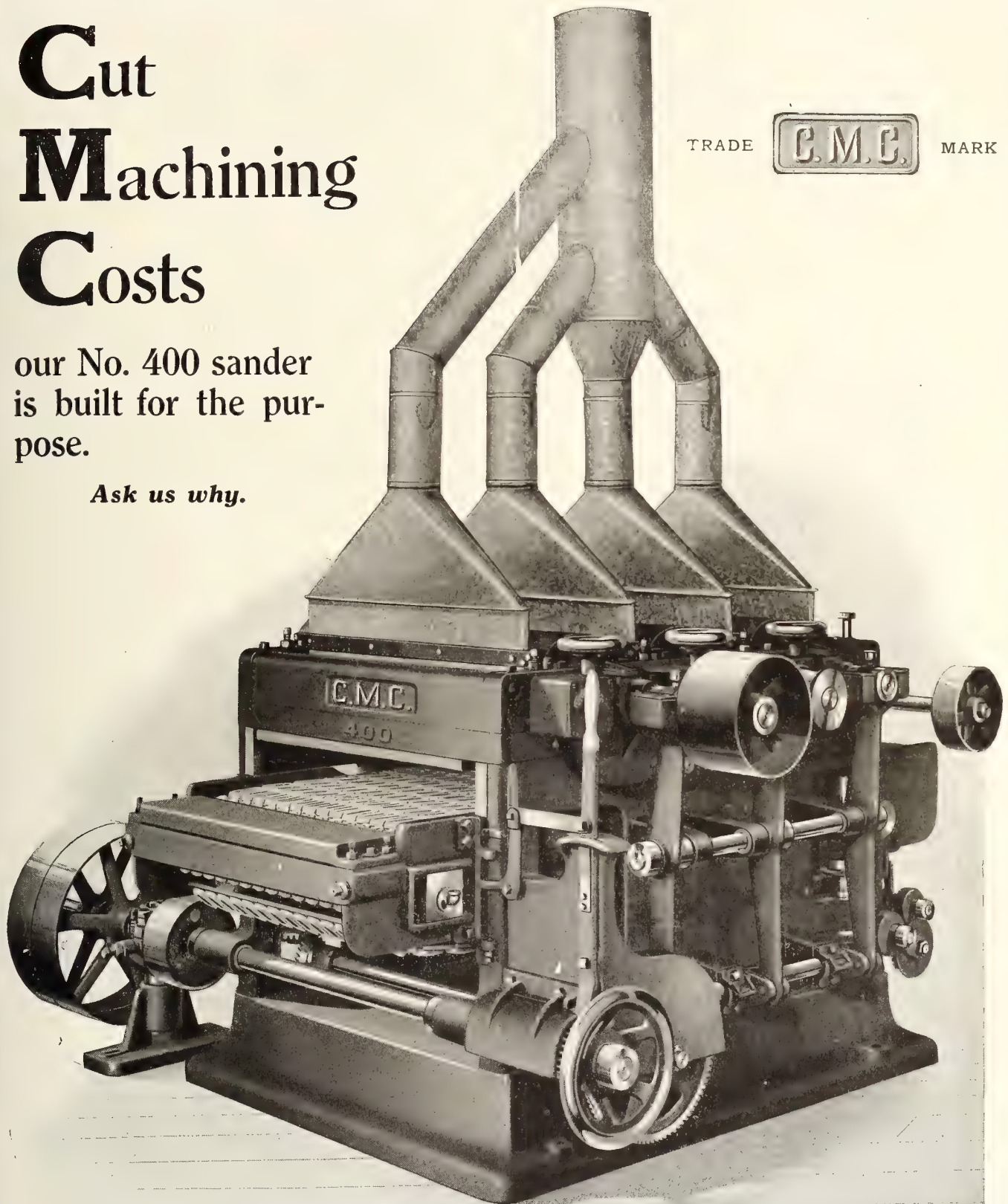
Name

Address

Cut Machining Costs

our No. 400 sander
is built for the pur-
pose.

Ask us why.



CANADA MACHINERY CORPORATION, LIMITED, GALT, ONTARIO

Toronto Office and Warerooms :

Brock Avenue Subway

Certus Cold Glue

What

The Original Waterproof Glue. Comes in the form of a white powder. Easy to handle. Will keep indefinitely.

Where

Everywhere. Will produce a wood joint or panel of higher adhesiveness and resistance than animal and vegetable glue. Equally good for jointing together steel, brass, stone, glass, linoleum, cork, cloth, etc., to wood and leather.

How

Easy to prepare. Simply add cold water to powder, mix and let stand for 15 minutes. That is all. It is then ready for use. **Batch of veneer glue good for 5 hours, the same of joint glue good for a day's work, without the slightest deterioration.** Easily applied with brush or spreader. Agreeable to use. Saves heat and dry kilns.

Certus stood foremost in fulfilling the exacting needs of war production. This fact should commend it to manufacturers who are going to build during times of peace on the basis of merit and quality. Certus is an absolute necessity for manufacturers who contemplate seeking foreign markets. Certus-built products will resist indefinitely the most humid climates.

You can secure this Certus waterproof glue at a very small expense by installing a Glue Mixer.



CERTUS COLD GLUE CO. - Detroit, Mich.

W. H. CUNNINGHAM & Co., Canadian Distributors.

Canadian Office: 183 Church St., TORONTO, ONT.

C. B. MORROW & CO.,

Distributors for

Pennsylvania, Maryland, Delaware, West Virginia.

Offices: Oliver Building, Pittsburgh, Pa.

Complete stock carried by

W. H. GAGE GLUE COMPANY

Southern and Southwestern Distributors

114 Pine Street - St. Louis, Mo.

T. M. DUCHE & SON, Eastern Distributors, 376-378 Greenwich St., New York City.

SWENSON & SCULLY CO., Distributors for Northern Illinois, Rockford, Ill.

Perkins Vegetable Glue

Behind our claim for a Superior Vegetable Glue
is

a well equipped factory operated by men
who know the Trade wants only the best

Our Manufacturing Process
is the Secret of
Our Perfect Product

This label and Trade
Mark Protect
you and your trade.

PERKINS
183

Trade Mark

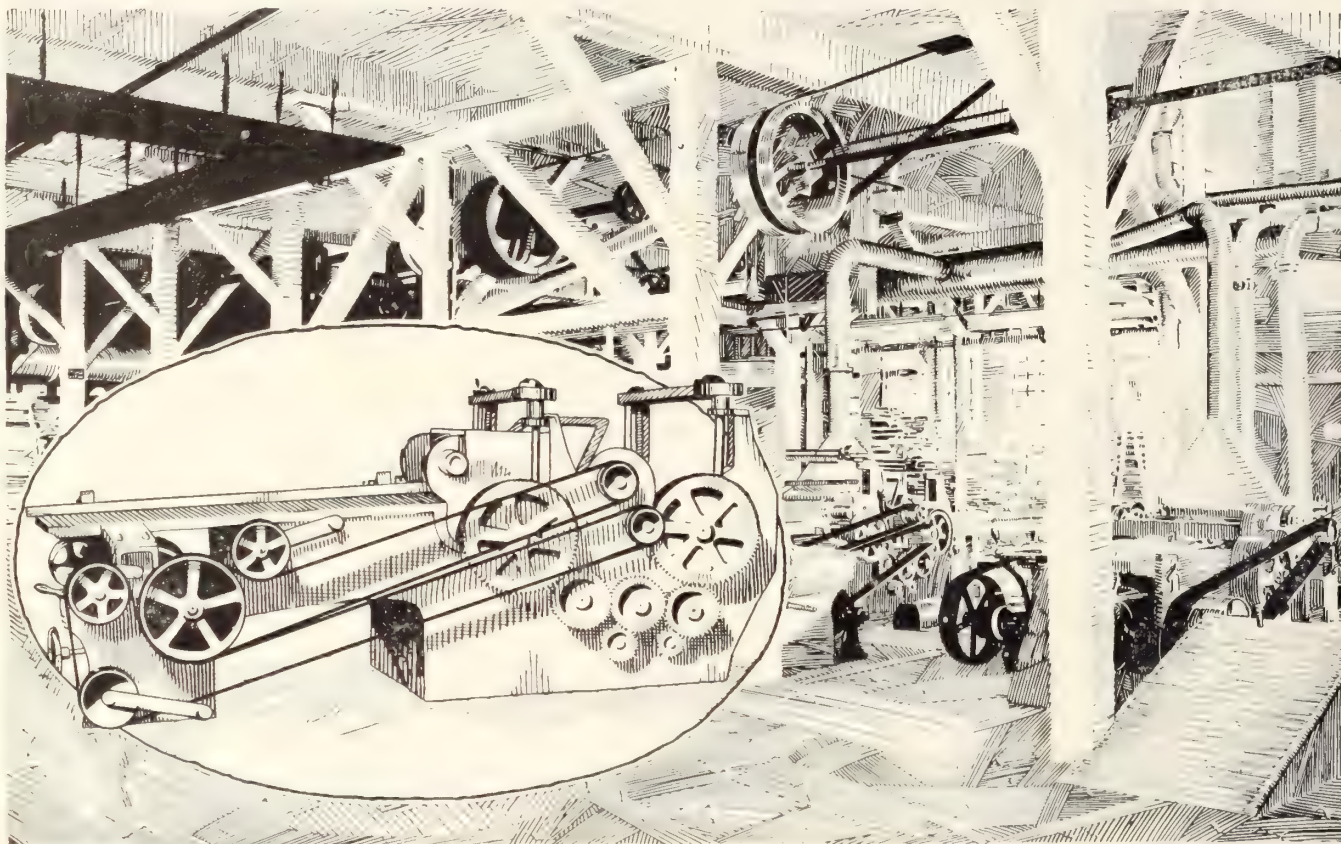
They will ask no more
questions when you
say you use
"Perkins 183"

Process and Product Patents covering Perkins Glue were granted July 2nd and March 19th, 1912, and have been held valid and infringed by United States Circuit Court of Appeals. Corresponding Letters Patent granted in Canada.

Perkins Glue Company

Factory & General Offices :
Lansdale, Pennsylvania

Sales Office :
South Bend, Indiana



Scene in the Haley Mill showing Goodyear Extra Power Belting in use.

Another Convert

HALEY & SONS

Lumber Merchants

Gentlemen,

We want to tell you about the Goodyear Extra Power Rubber Belting we bought for our new mill two years ago and what great satisfaction this Belting has given us. As you are aware, we bought this kind of belting from you for the equipment of our mill **throughout**, even to planers and matchers. We were skeptical at the time about using this belting on our matchers, especially on the side heads, as that is a very trying place for any kind of a belt. We concluded we would try your rubber belting, as we thought then as a makeshift. Now it has been something over two years since we belted up our matchers with your belting and the original belts are yet on these machines and still giving good service. We thought where this belting of yours had proved so eminently satisfactory that we should tell you just as we thought about it and you know we are giving this testimonial of Goodyear Extra Power Rubber Belting entirely at our own initiative.

Yours truly,

HALEY & SON.

GOODYEAR  **YEAR**
MADE IN CANADA

GOODYEAR EXTRA POWER BELTING

Almost Unbelievable Power-Saving and Economy

Time and again we have found purchasers of Goodyear Extra Power Belting openly skeptical that it would live up to our promises.

Time and again they have told us not only of lower belting costs, but also of increased and faster production, time and power saved.

Today there is no reason for any plant to buy belting on promises.

On file in our office are letters which enable you to buy belting by proof.

Records of Goodyear Belting performance.

Records of extreme long-life which means economy.

Records of pulley-gripping, non-slip qualities which save power.

Records of work under strenuous conditions of heat, cold, acids.

Records of strength and flexibility.

Records which prove that without Goodyear Extra Power Belting enough power is wasted in Canada every year by poor belts to pay a big dividend on Industry's capital.

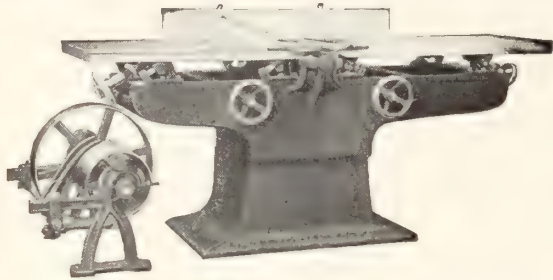
Some of this power is being wasted in your plant. Better belting, scientifically applied, will save you money. Without obligation to you, a belting man, trained by Goodyear, will call and make a record of your needs and experiences. Our recommendation will come from engineers who fit belts to conditions. Phone, wire or write the nearest branch.

The Goodyear Tire & Rubber Co. of Canada, Limited.

Branches — Halifax, St. John, Quebec, Montreal, Ottawa, Toronto, Hamilton, London, Winnipeg, Regina, Calgary, Edmonton, Vancouver.

EXTRA POWER BELTING

Silver's Jointers Mean Precision



The many special features of Silver's New Jointers aid greatly with their operation. Perfect work and speedy operation are points which will favor their use. Let us send you further particulars and catalog explaining our full line of machinery that will interest and prove beneficial to you.

The Silver Mfg. Company, Box 370, Salem, Ohio, U.S.A.

PRESSES

For Veneer and Veneer Drying

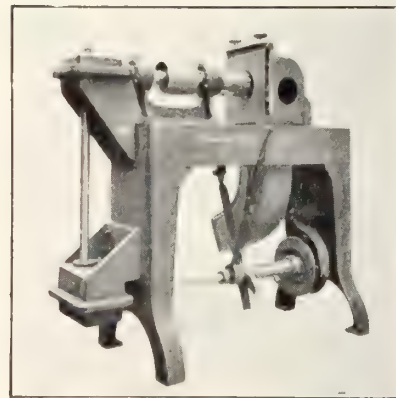
Made in Canada

William R. Perrin

Limited

Toronto

AUTOMATIC MACHINE FOR CUTTING HOLES



Patents Pending

This machine will cut holes or half holes in long or short boards, smooth and true in size. Will also cut wheels and automatically bore holes in the center at same operation. It works automatically on short blocks, feeding up to the head and pushing them out after they are cut. Has a capacity of 18 wheels or holes per minute. Will make bevel or square edge wheels. When writing give diameter, thickness and kind of wood to be used. Machines are made to suit the work. It has an attachment to cut hand-holds in crate ends, or a Special Machine is made for that purpose. When writing give street number.

Machine is substantially built of iron and steel, ball bearing equipped and worm gears running in grease.

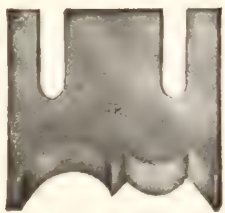
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The Virginia Hole Sawing Co.

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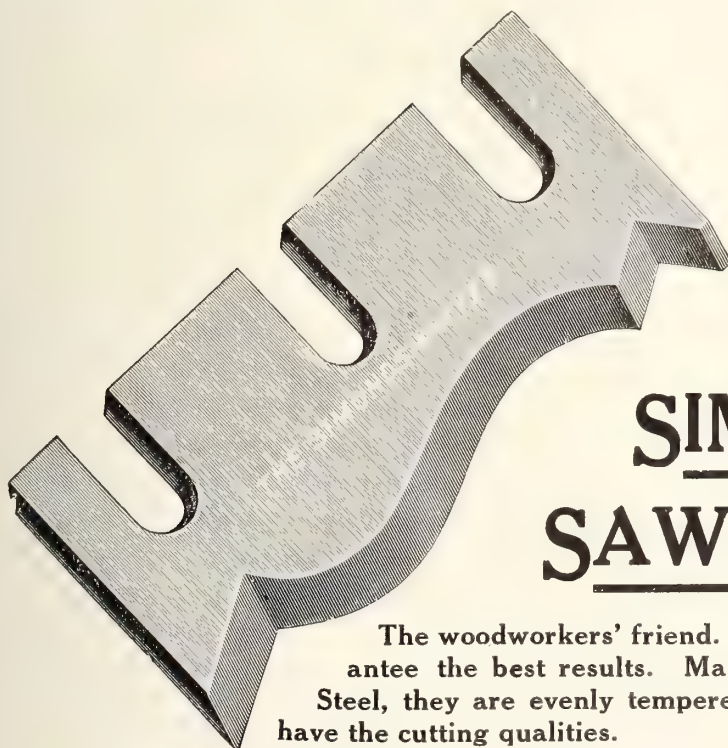
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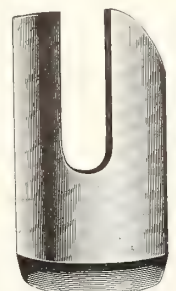
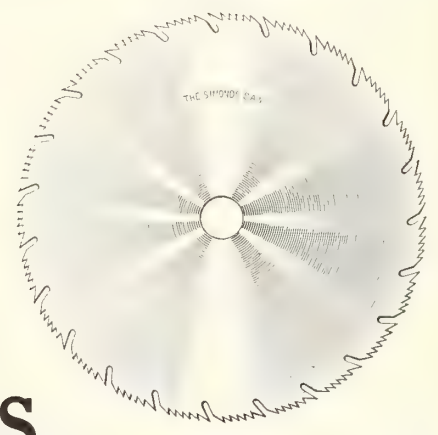
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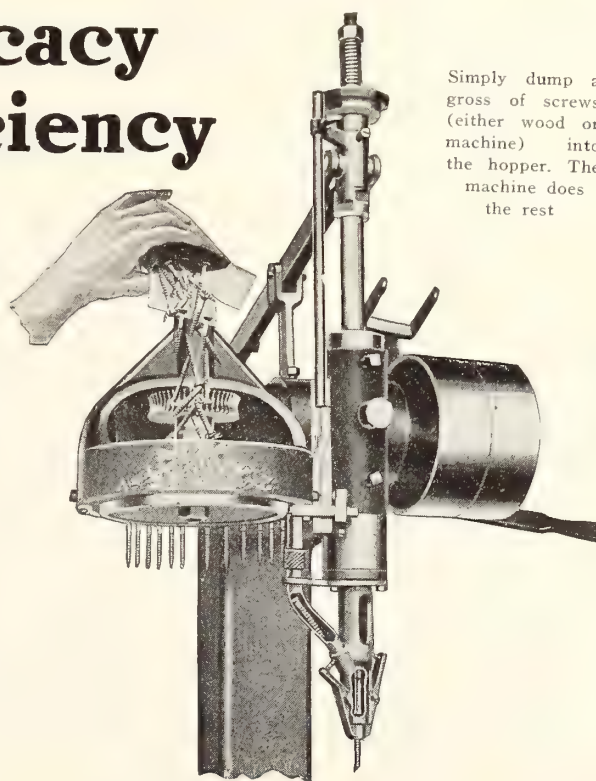


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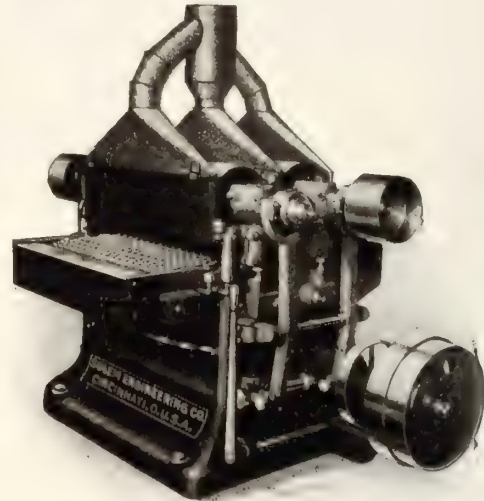
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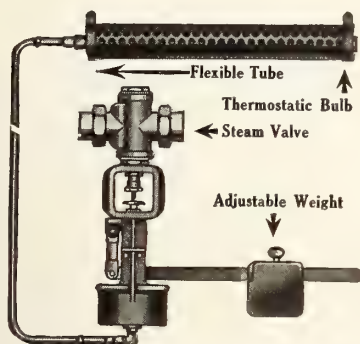
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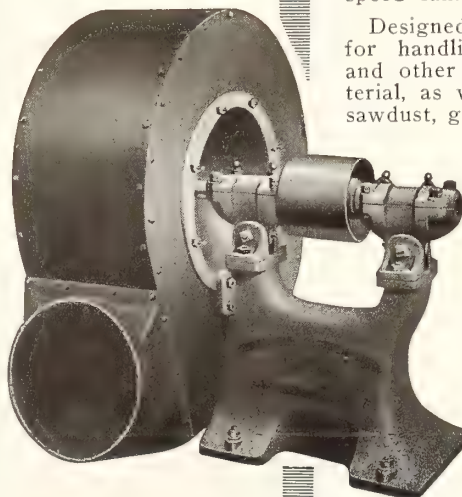
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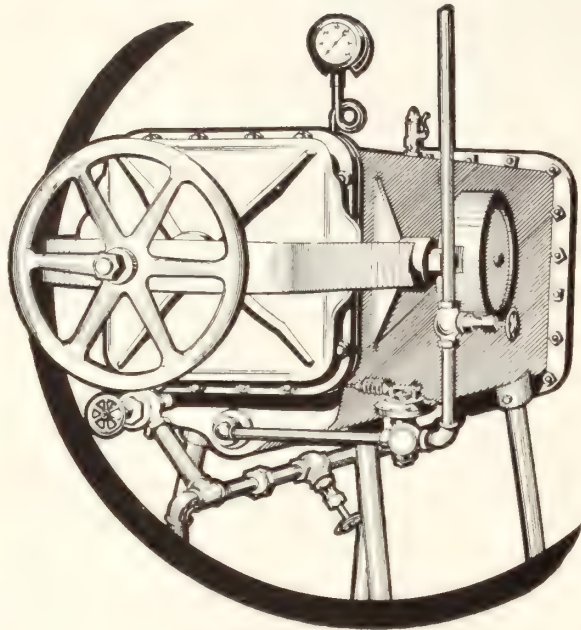


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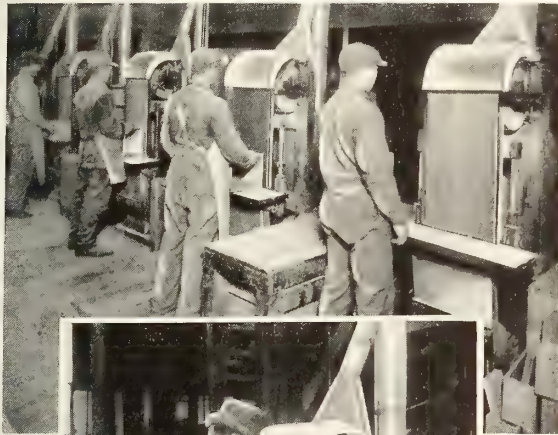
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Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

FLUTING HEADS

Fay & Egan Co., J. A., Cincinnati, Ohio.

FURNITURE CARVINGS

Decorators Supply Co., Chicago, Ill.

FURNITURE LEATHER

Eagle-Ottawa Leather Co., Grand Haven, Mich.

FURNITURE TRIMMINGS

Faultless Caster Co., Evansville, Ind.
Foster, Merriam Co., Meriden, Conn.
Weber, Knapp Co., Jamestown, N.Y.

GARNET PAPER AND CLOTH

Carborundum Co., Niagara Falls, N.Y.

GRAINING MACHINES

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDING WHEELS

Carborundum Co., Niagara Falls, N.Y.

GLUE

Bury & Co., Robt., Toronto, Ont.
Canada Glue Company, Brantford, Ont.
Certus Cold Glue Co., Detroit, Mich.
Kane Manufacturing Co., Chicago, Ill.
Perkins Glue Company, South Bend, Ind.

GLUE CLAMPS

Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Neilson & Company, J. L., Winnipeg.

GLUE HEATERS

Fay & Egan Co., J. A., Cincinnati, Ohio.
International Electric Co., Indianapolis, Ind.
Jackson, Cochrane & Company, Kitchener, Ont.
Pringle, R. E. T., Toronto, Ont.

GLUE JOINTERS

Canada Machinery Corporation, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

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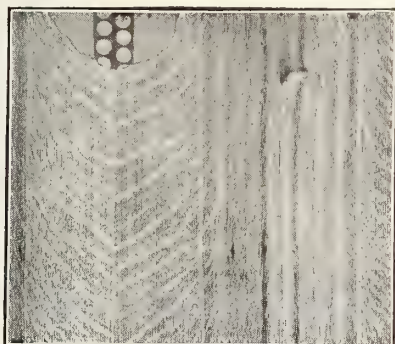
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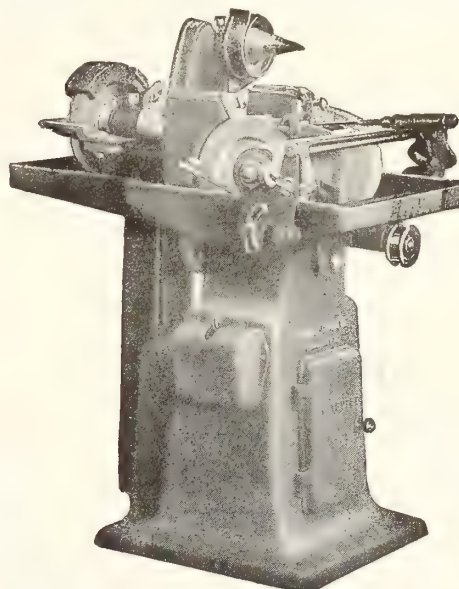
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HANOVER, PA.

"Canadian Woodworker" Buyers' Directory—Continued

GLUE SPREADERS

Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GLUE ROOM EQUIPMENT

Perrin & Company, W. R., Toronto, Ont.

GLUING MACHINES

Francis & Co., Chas. E., Rushville, Ind.

GRINDERS (Cutter)

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

GRINDERS (Knife)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GRINDING WHEELS

Carborundum Co., Niagara Falls, N.Y.

GROOVING HEADS

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.

GUM LUMBER

Aberdeen Lumber Co., Pittsburg, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
Anderson-Tully Co., Memphis, Tenn.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bellgrade Lumber Co., Memphis, Tenn.
Brown & Co., George C., Memphis, Tenn.
Churchill-Milton Lumber Co., Louisville, Ky.
Cornelius Lumber Co., St. Louis, Mo.
Gum Lumber Association, Memphis, Tenn.
Heyser Lumber Co., W. E., Cincinnati, Ohio.
Holly Ridge Lumber Co., Louisville, Ky.
Nickey Bros., Memphis, Tenn.
Paepcke-Leicht Lumber Co., Chicago, Ill.
Probst Lumber Co., Cincinnati, Ohio.
Thomas & Proetz Lumber Co., St. Louis, Mo.
Wisconsin Lumber Co., Chicago, Ill.

HAND SCREWS

Fay & Egan Co., J. A., Cincinnati, Ohio.

HANDLE & SPOKE MACHINERY

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Whitney & Son, Baxter D., Winchendon, Mass.

HARDWARE

Laidlaw Bale-Tie Co., Hamilton, Ont.
Weber, Knapp Co., Jamestown, N.Y.

HARDWOOD LUMBER

Aberdeen Lumber Co., Pittsburgh, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
American Oak Mfrs.' Assn., Memphis, Tenn.
American Walnut Association, Washington D.C.
Anderson-Tully Co., Memphis, Tenn.
Atlantic Lumber Company, Toronto, Ont.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bellgrade Lumber Co., Memphis, Tenn.
Bonner & Sons, J. H., Memphis, Tenn.
Brown & Company, Geo. C., Memphis, Tenn.
Burns & Knapp Lumber Co., Conneautville, Pa.
Bury & Company, Robert, Toronto, Ont.
Cornelius Lumber Co., St. Louis, Mo.
Canadian General Lumber Co., Toronto, Ont.
Churchill-Milton Lumber Co., Louisville, Ky.
Clark & Sons, Edward, Toronto.
Darby Hardwood Lumber Co., Memphis, Tenn.
Des Moines Sawmill Co., Des Moines, Iowa.
Dooley Lumber Co., F. T., Memphis, Tenn.
Elgie & Jarvis Lumber Co., Toronto, Ont.
Evansville Band Mill Co., Evansville, Ind.
Gayoso Lumber Co., Memphis, Tenn.
Hart & McDonagh, Toronto, Ont.
Heyser Lumber Co., W. E., Cincinnati, Ohio.
Holly Ridge Lumber Co., Louisville, Ky.
Hunt, Wellington & Smith, Nashville, Tenn.
Kersley, Geo., Montreal, Que.
Korn-Conkling Co., Cincinnati, Ohio.
Lawrence & Co., P. J., St. Louis, Mo.
Long-Knight Mfg. Co., Indianapolis, Ind.
Maley & Wertz, Evansville, Ind.
McLennan Lumber Co., Montreal, Que.
Memphis Band Mill Co., Memphis, Tenn.
Mowbray & Robinson, Cincinnati, Ohio.

Paepcke Leicht Lumber Co., Chicago, Ill.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City.
Percy E. Heeney, Kitchener, Ont.
Pickrel Walnut Co., St. Louis, Mo.
Probst Lumber Co., Cincinnati, Ohio.
Shafer Hardwood Co., John I., South Bend, Ind.
Spencer, C. A., Montreal, Que.
Stark & Co., Jas. E., Memphis, Tenn.
Stimpson & Co., J. V., Owensboro, N. Y.
Wisconsin Lumber Co., Chicago, Ill.

HYDRAULIC VENEER PRESSES

Perrin & Company, Wm. R., Toronto, Ont.

JOINTERS

American Woodworking Machinery Company,
Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

LATHES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.

MACHINE KNIVES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

METALINE NAILS

Dominion Tack & Nail Co., Galt, Ont.

MITRE SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

MOULDERS

Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Vonnegut Machinery Co., Indianapolis, Ind.

MULTIPLE BORING MACHINES

Root Company, B. M., York, Pa.

MULTIPLE BOXING MACHINES

Fay & Egan Co., J. A., Cincinnati, Ohio.
Nash, J. M., Milwaukee, Wis.

OIL STONE GRINDERS

Mummert-Dixon Co., Hanover, Pa.

PANELS

Hay & Co., Limited, Woodstock, Ont.
Waetjen & Co., George L., Milwaukee, Wis.

PATTERN SHOP MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company,
Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PERIOD TURNINGS

Walter & Sons, J., Kitchener, Ont.

PLANERS

American Woodworking Machinery Company,
Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLANING MILL MACHINERY

American Woodworking Machinery Company,
Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PORTABLE DRILLS

Wisconsin Electric Co., Wisconsin, U.S.A.

PRESSES (Veneer)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Co., Wm. R., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.

PULLEYS

Bernard Industrial Co., A., Fortierville, Que.

RESAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RIM AND FELLOE MACHINERY

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.

RIP SAWING MACHINES

American Woodworking Machinery Company,
Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company,
Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RUBBING MACHINES

DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.
Paasche Air Brush Co., Chicago, Ill.

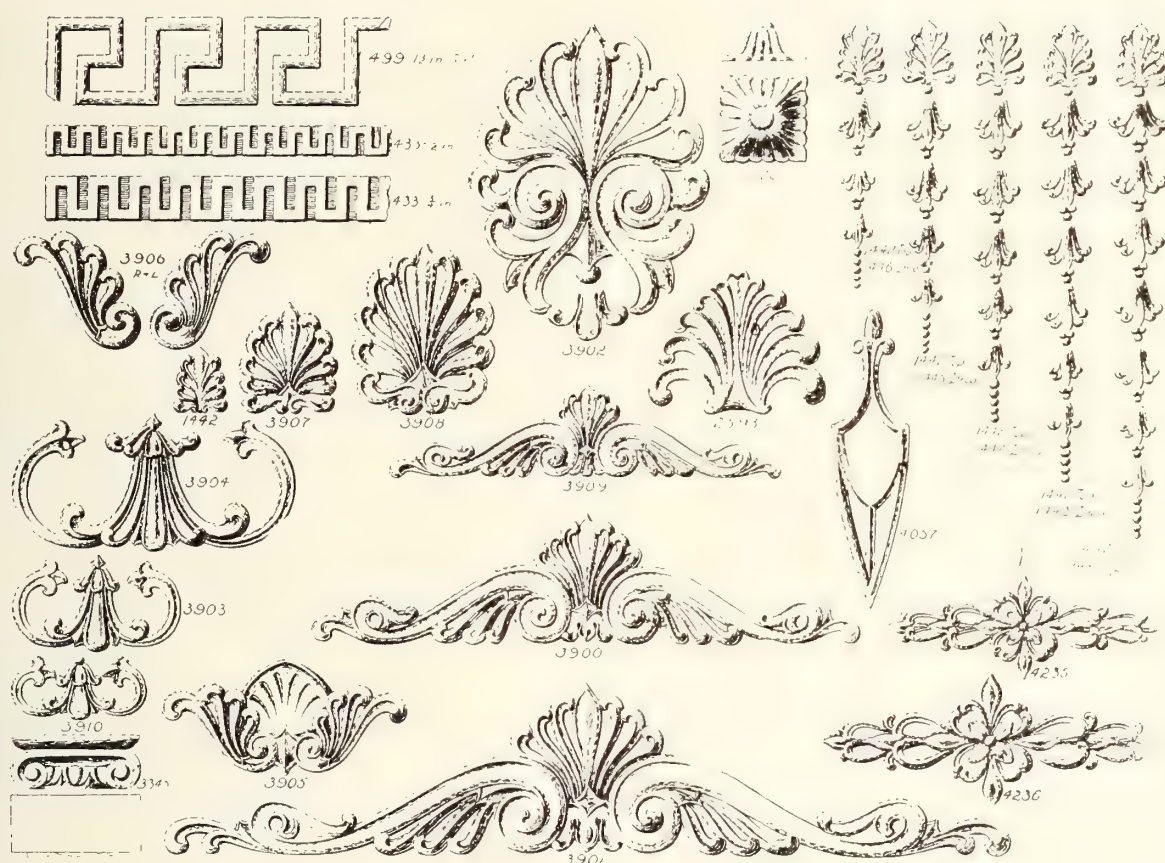
SAFETY DEVICES

Cowan & Company, Galt, Ont.

SANDERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company,
Preston, Ont.
Solem Engineering Co., Sheboygan, Wis.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

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"Canadian Woodworker" Buyers' Directory—Continued

SASH, DOOR & BLIND MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAWS

Atkins & Co., E. C., Indianapolis, Ind.
Radcliff Saw Mfg. Company, Toronto, Ont.
Shurly-Dietrich, Ltd., Galt, Ont.
Simonds Canada Saw Co., Montreal, Que.
Wallace & Co., J. D., Chicago, Ill.

SAW SWAGES

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.

SAW TABLES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SCRAPING MACHINES

Canada Machinery Corporation, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.

SCREW DRIVING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Reynolds Machine Co., Massillon, Ohio.

SCROLL SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SECOND-HAND MACHINERY

Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

SHAPERS

American Woodworking Machinery Company, Rochester, N.Y.
Cowan & Company, Galt, Ont.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS

Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

SPRING MATTRESS FRAMES

Newman Sons, J. P., Warton, Ont.

SPRINGS FOR UPHOLSTERY

Weber, Knapp Co., Jamestown, N.Y.

STAINS

Ault & Wiborg, Toronto, Ont.
Du Pont Fabrikoid Co., Toronto.
Marietta Paint & Color Co., Marietta, Ohio.

SINGLE SPINDLE BOXING MACHINES

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.

STAVE SAWING MACHINE

Whitney & Son, Baxter D., Winchendon, Mass.

SURFACERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Tannewitz Works, Grand Rapids, Mich.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES

Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES

Walter & Company, B., Wabash, Ind.

TACKS AND NAILS

Dominion Tack & Nail Co., Galt, Ont.

TEMPERATURE REGULATORS

Canadian Powers Regulator Co., Toronto, Ont.

TENONING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TIME CLOCKS

International Business Machines Co., Toronto, Ont.

TRIMMERS

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRUCKS

National Dry Kiln Co., Indianapolis, Ind.

UPHOLSTERER'S FLOCK AND BATTING

Bauers Limited, Waterloo, Ont.

VARNISHES

Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg Company, Toronto, Ont.
Du Pont Fabrikoid Co., Toronto.
Jamestown Wood Finishing Co., Jamestown, N. Y.
Penfound Varnish Co., Toronto, Ont.

VARNISH SPRAYERS

DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

VENEERS

Bury & Company, Robert, Toronto, Ont.
Central Lumber Co., Indianapolis, Ind.
Christman Veneer & Lumber Co., St. Louis, Mo.
Dean Spicker Company, Chicago, Ill.
Empire Veneer Company, Chicago, Ill.
Hartzell, Geo. W., Fiqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Geo. Kersley, Montreal, Que.
Korn-Conkling Co., Memphis, Tenn.
Long-Knight Lumber Co., Indianapolis, Ind.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Nartzik, J. J., Chicago, Ill.
National Veneer & Lumber Co., Indianapolis, Ind.
North Vernon Lumber Co., North Vernon, Ind.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Roberts & Co., John N., New Albany, Ind.
Southern Veneer Mfg. Co., Louisville, Ky.
Thompson Veneer Co., W. T., Edinburgh, Ind.
Toronto Veneer Company, Toronto, Ont.
Veneer Manufacturers Co., Chicago, Ill.
Waetjen & Co., George L., Milwaukee, Wis.

VENEER TAPE

Ideal Coated Paper Co., Brookfield, Mass.

VENTILATING APPARATUS

Canadian Blower & Forge Co., Kitchener, Ont.

VENEER JOINTERS

Garlock-Walker Machinery Co., Toronto, Ont.

VENEER MACHINERY

Garlock-Walker Machinery Co., Toronto, Ont.

VENEER PRESSES (Hand and Power)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Company, Wm. R., Toronto, Ont.

VICES

Fay & Egan Co., J. A., Cincinnati, Ohio.

WOOD FINISHES

Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg, Toronto, Ont.
Penfound Varnish Co., Toronto, Ont.

WALNUT LUMBER

American Walnut Association, Washington, D. C.
Pickrel Walnut Company, St. Louis.

WOOD SCREWS

Robertson Mfg. Co., P. L., Milton, Ont.

WOOD TURPENTINE

Brown Corporation, Quebec, Que.

WOOD TURNING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Mattison Machine Works, Rockford, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES

Fay & Egan Co., J. A., Cincinnati, Ohio.

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Your Whole Table is Condemned*

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Satisfied Customers**

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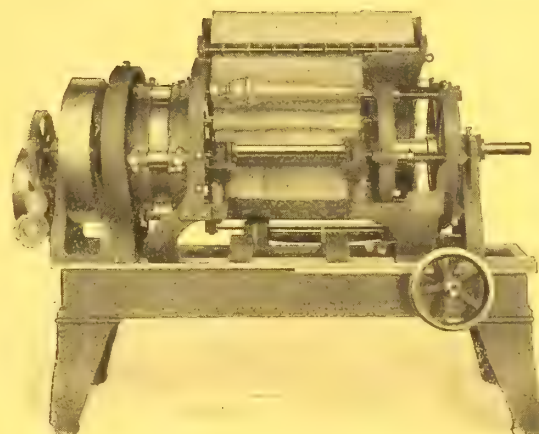
B. Walter & Company

Edsall St., Wabash, Ind.

Canadian Representative:

A. B. CAYA, 28 King St. East, Kitchener, Ont.

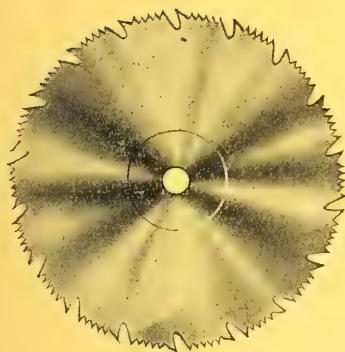
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It will pay you well to look into the merits of this equipment for your factory.

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STERLING QUALITY

SAWS and KNIVES

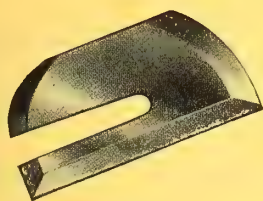
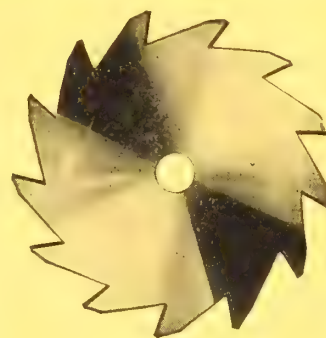
The best steel—the most careful and accurate workmanship—the equipment that will eventually save you money.

Atkins Sterling Quality Saws and Knives are proving their superiority by competitive tests in the largest plants of the country. We welcome your most careful investigation, as we know the satisfaction that will result.

Write to-day for our Knife Booklet "CW"
and Pattern Template Paper.

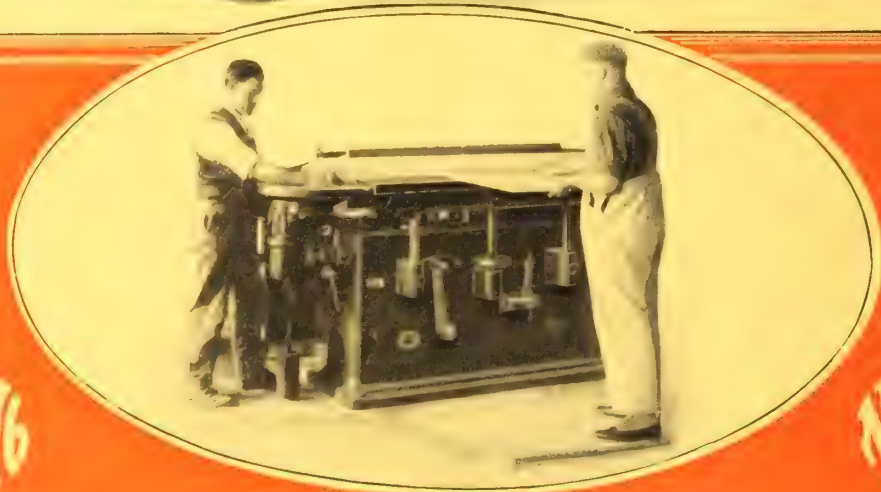
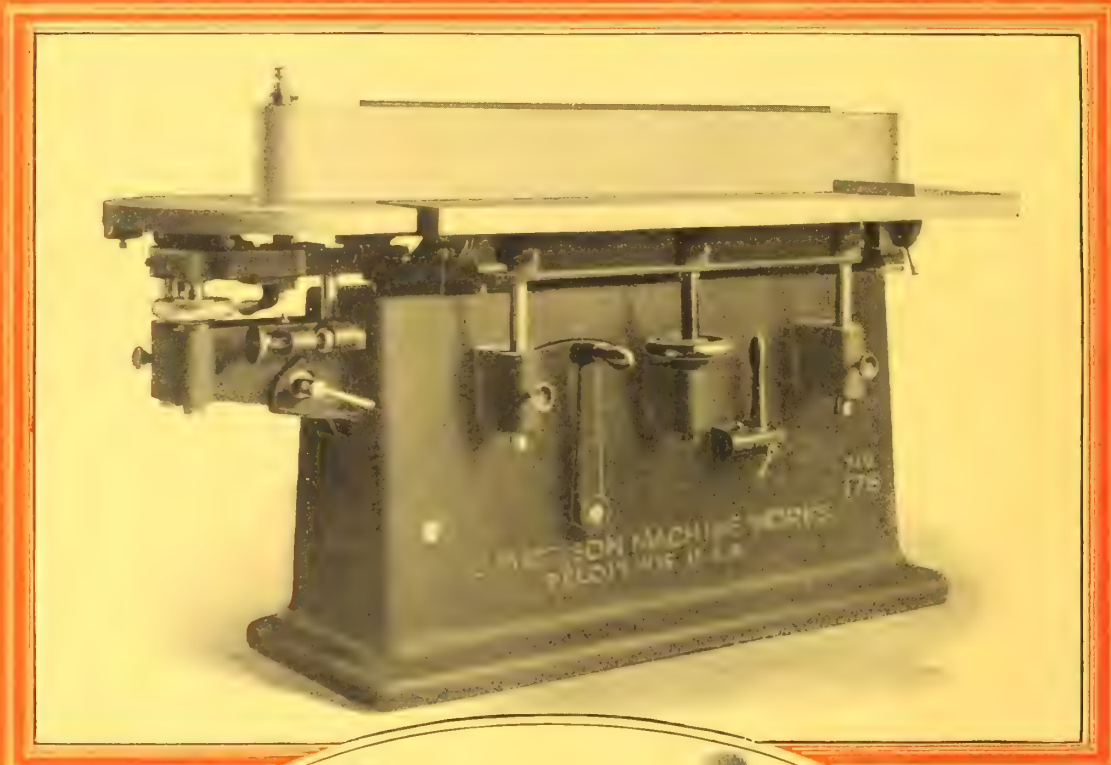
E. C. ATKINS & CO.

Makes of Steling Saws



Factory—HAMILTON, Ont.

Vancouver Branch—109 Powell Street



No. 176

No. 176

---For Sanding Straight or Curved Edges

The Mattison Oscillating Belt Sander No. 176 is of exceptional value for finishing curved edge-work of small radius, as well as ornamental square and octagonal turnings. The even steady travel of the belt makes practical the use of narrow-nosed forms for sanding these small curves and concave members; and the machine itself is built heavy and rigid to prevent any chatter marks. Let us send you our illustrated circular on the No. 176.

MATTISON MACHINE WORKS

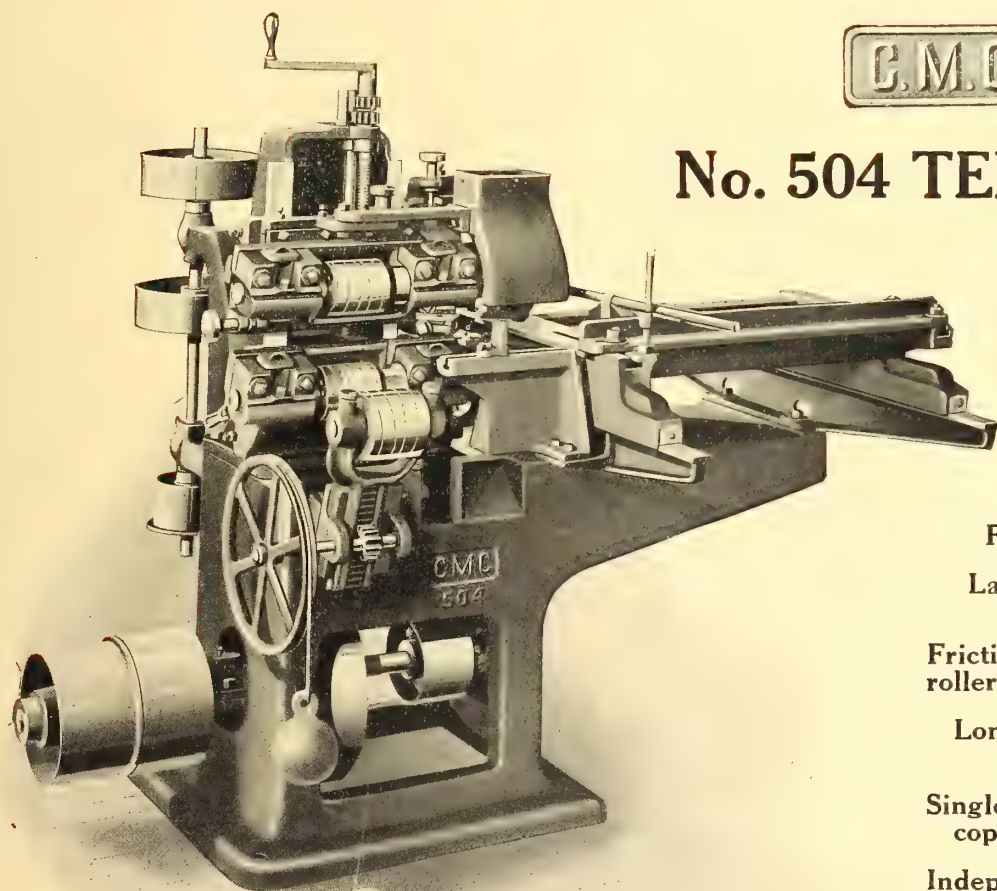
ROCKFORD, ILLINOIS, U. S. A.

Selling Representatives for New England

Baxter D. Whitney & Son, Winchendon, Mass.

CANADIAN WOODWORKER

and
Furniture Manufacturer



No. 504 TENONER

FEATURES:

- Large diameter spindles
- Frictionless dustproof rollers beneath table
- Long belt drive to copes
- Single, double or no copes as required
- Independent or simultaneous adjustment to copes
- Cut-off saw if wanted

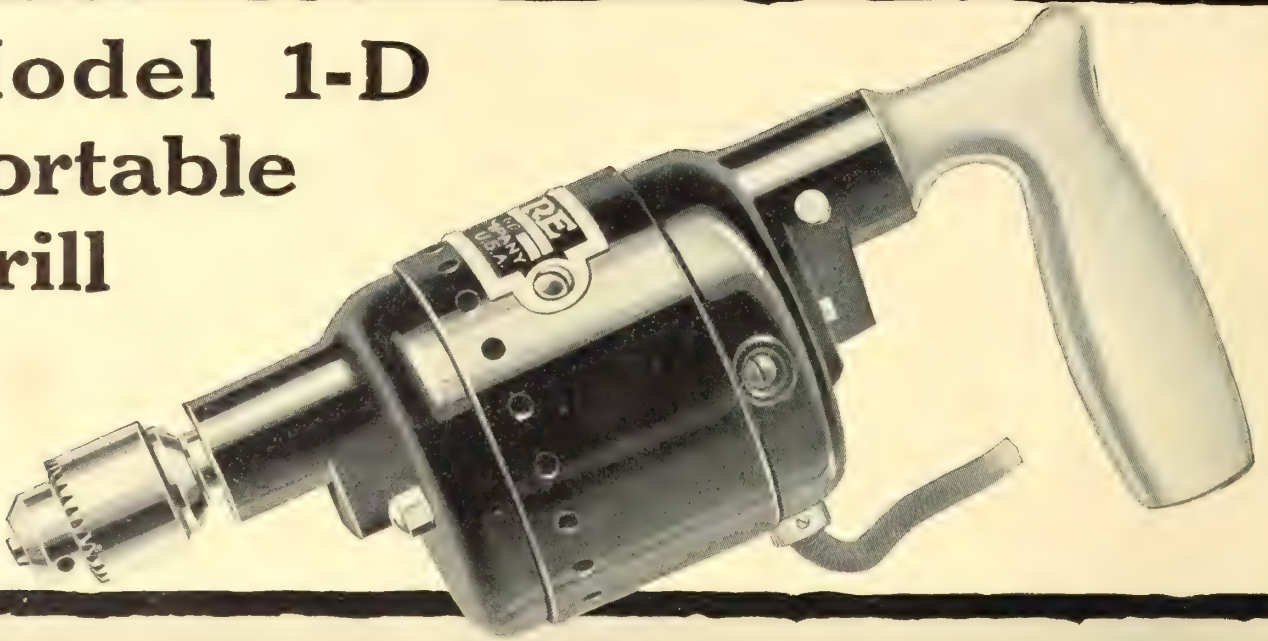
The C.M.C. No. 504 single end Tenoner is unsurpassed for rigidity, ease of operation and convenience. Your address will give us the opportunity of telling you more about it.

CANADA MACHINERY CORPORATION, LIMITED, GALT, ONTARIO

Toronto Office and Warerooms

Brock Avenue Subway

Model 1-D Portable Drill



HANDY—ECONOMICAL—EFFICIENT

Specifications:

Length—10 inches.

Weight—4 $\frac{3}{4}$ pounds.

Capacity—Steel, 0 to $\frac{1}{8}$ ". Wood and alloys, 0 to $\frac{1}{4}$ ".

Motor—Universal, on either direct or alternating current.

Diameter of Motor—3 $\frac{3}{8}$ inches.

Spindle—Offset from center $\frac{1}{8}$ ".

Helical Gears.

Aluminum Handle.

Complete with 10-ft. cord, plug, switch and chuck.

Jacob's Chucks used as a regular equipment.

FOR speed in drilling and counter-sinking small holes, this tool is just what you need. It can be used on any kind of material—steel, iron, brass, aluminum or wood—and gives lasting service.

If your dealer cannot supply you with the Model 1-D, tell us about your requirements.

Wisconsin Electric Company
7115 Sixteenth Street, Racine, Wisconsin, U. S. A.

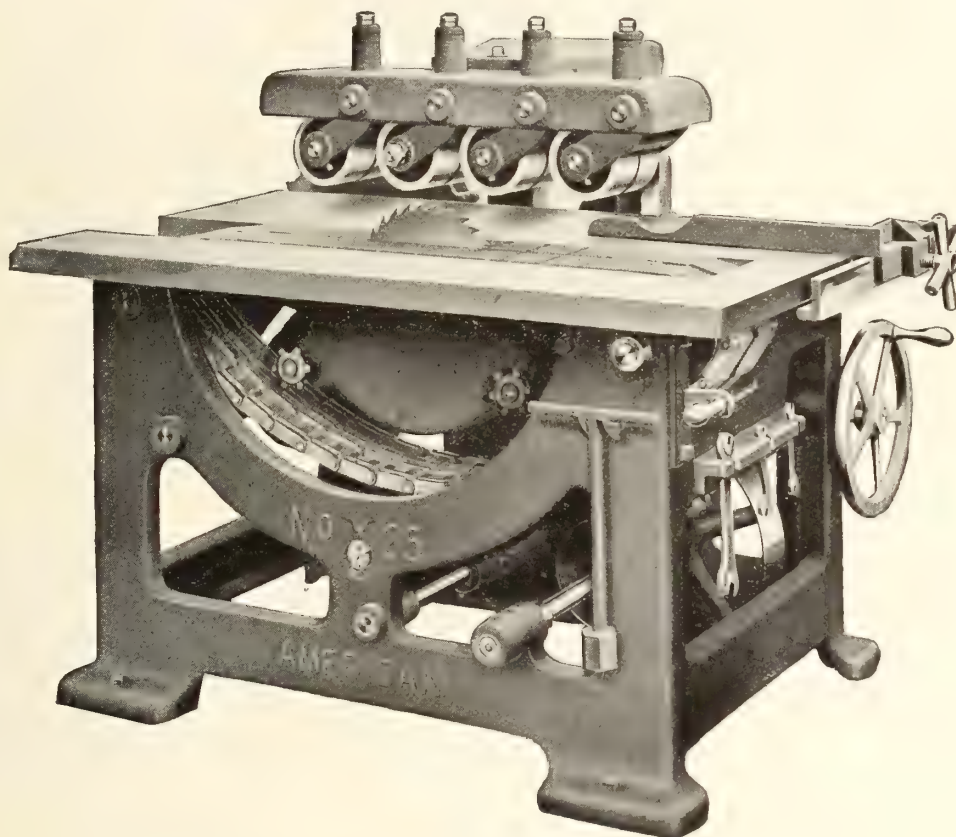
DUMORE GEARED ELECTRIC DRILLS

AMERICAN WOOD WORKING MACHINERY CO.

ROCHESTER, N. Y.

SALES OFFICE FOR BRITISH COLUMBIA, PORTLAND OREGON
AGENTS FOR THE REST OF CANADA, GARLOCK-WALKER MACHINERY CO., TORONTO
AGENTS FOR GREAT BRITAIN, THE PROJECTILE CO., LONDON

FIRST IN QUALITY



American No. 25—Edging Saw

This is a medium price Edging Saw of a superior order—thoroughly efficient and embodying first class workmanship. It will take stock as short as 5 inches and 20 inches wide.

Write Garlock-Walker for circular.

CANADIAN



SALES AGENTS

Garlock-Walker Machinery Company

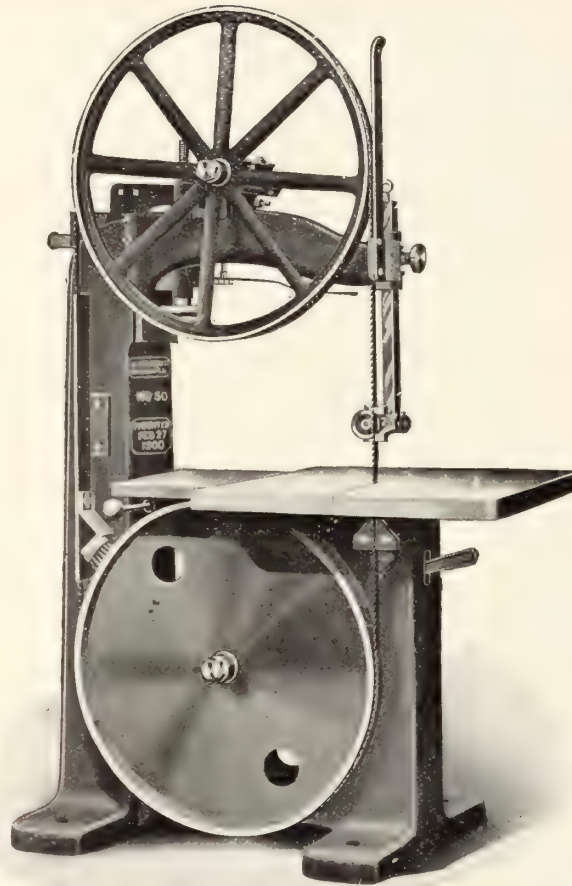
32 Front Street West, TORONTO, ONT.

Limited

TORONTO

MONTREAL

WINNIPEG



Save 25% to 50% of Blade Upkeep and Power Cost Get Two, Even Three Times As Much Work

It's not the blades that wear out that cost, it's those that break.

It's the broken blades that cut down productive time and cost to repair and to replace.

Blade breakage is reduced to a minimum on Fay-Egan No. 50—36" Square Column "Lightning Line" Band Scroll Saws.

The Fay-Egan "Knife Edge" Blade Tension, made on the principle of a fine laboratory balance scale, is so sensitive that it compensates for changes in atmospheric conditions—yet, so flexible, you can pass a block between blade and wheel, while running, without breaking the blade. Folks tell us blade expense on "No. 50" averages 50 to 75 per cent. less than on the old timers.

The solid lower wheel acts like the fly wheel on your engine, its momentum carrying the load, so that the power consumption is reduced fully one-half, while at the same time it controls the light-spoked upper one, preventing over-running and choking down on a heavy cut.

The heavy square column eliminates vibration and permits the wheels to be revolved at 50 to 100 per cent higher speed, increasing the cutting capacity to double, and in some cases, triple that of the ordinary band saw.

As a user of saws, you cannot afford to ignore what Fay-Egan Square Column Band Saws are doing for others and can do for you. An investigation does not obligate you.

Write for Bulletin M-4

J. A. FAY & EGAN CO.

153-163 W. Front St.

CINCINNATI, O.

This Moulder Has "Made Good"



"The Invariable Choice of the Man Who Knows."

Yates No. 108 Open Side Moulder

In all sections where moulders are used you will find the Yates No. 108. No other moulder has obtained, and retained, the high opinion of practical millmen all over the continent as has this very efficient machine.

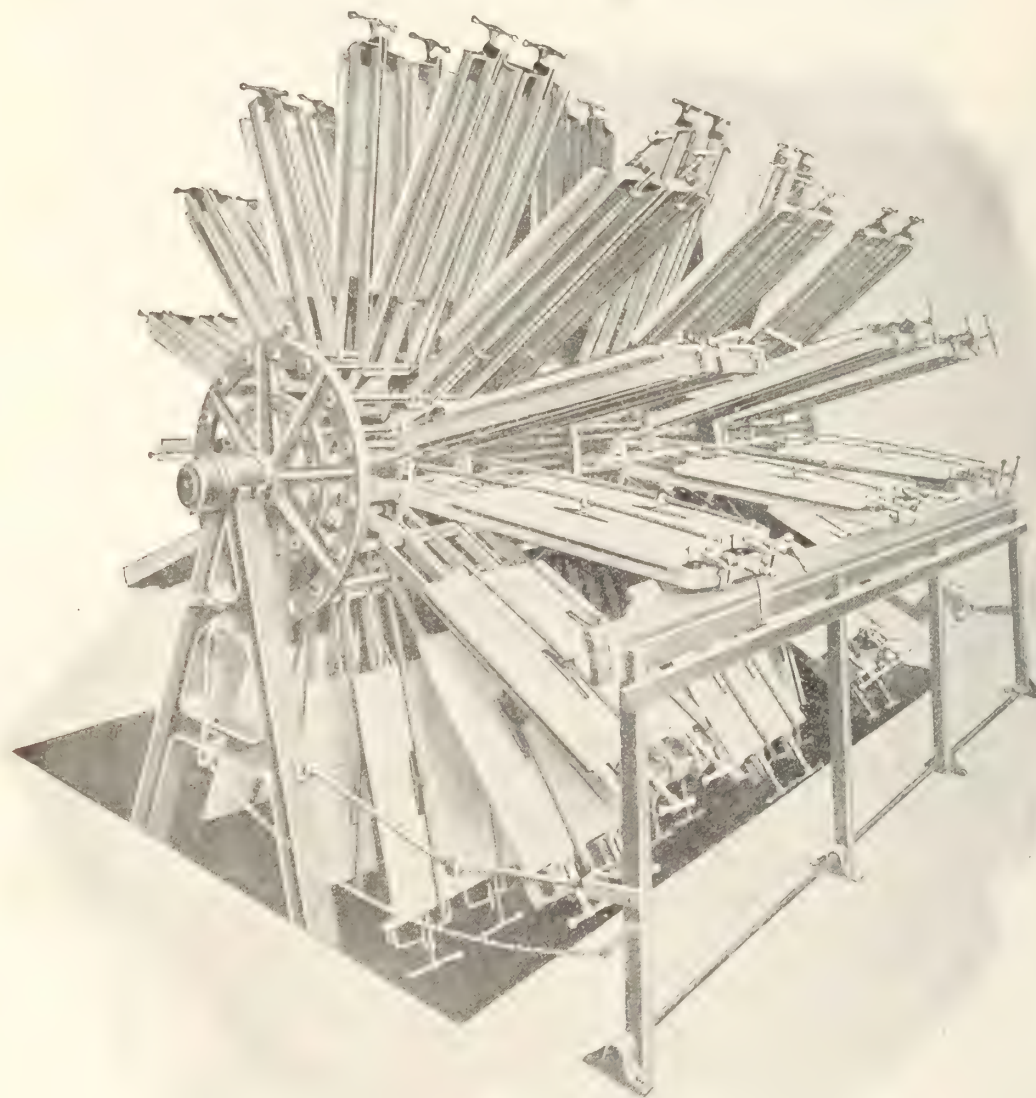
There are over 1,500 in use and they are going as strong as ever. You want our illustrated No. 108 circular if your moulding equipment is not up-to-date. Sent free and without obligation. Write today.



P. B. Yates Machine Co. Ltd.

HAMILTON, ONT. CANADA
U.S. PLANT BELOIT, WIS.

The No. 200 Perpetual Revolving Clamp



Simplicity marks this No. 200 Perpetual Revolving Clamp as ideal for efficiency. Producing perfect results wherever used, you'll find it excellent for chair seats, furniture, dimension stock, school desks, refrigerator ends, special shapes, etc. The No. 200 Perpetual Revolving Clamp occupies less space and gives greater room for increasing output. Takes in $2\frac{1}{2}$ " in thickness up to 40" wide and 14' long. Each clamp is fitted with side brackets of steel, giving 10 inches spread to facilitate the handling of short stock like chair seats, etc. Each clamp is provided with spring steel binder to hold down wide or thin stock, so it cannot buckle when clamped. Sizes: From 2 sections with 32 clamps to 12 sections with 192 clamps, or any desirable size. Floor space, 10 ft. x 12 ft. Height, 10 ft. Weight, 1 to 3 tons. Write us for further information.

Jackson, Cochrane & Company

KITCHENER - CANADA

The "Shimer Limited" Expansion Head

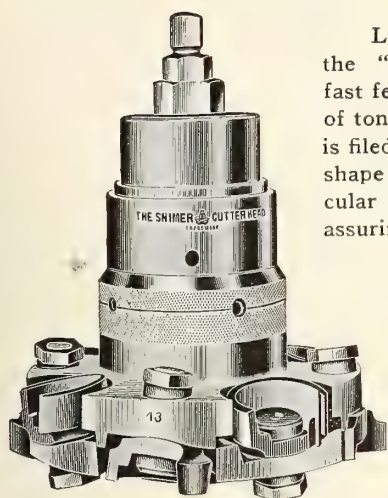


Fig. 627

Let us draw your attention to the advantages of using the "SHIMER CUTTER HEAD" for general Mill and fast feed Planer work. The Cutter is turned to cut the shape of tongue and groove desired, so that to sharpen the cutter it is filed or ground on its face, guaranteeing the user the same shape of cut during the life of the cutter. The bit being circular has from $3\frac{1}{2}$ in. to 5 in. cutting length to the cutter, assuring long wearing life to the cutters.

Note that the cutter, being fastened to a concave seat on a compound angle, assures the user of the proper clearance of cutters, consequently they never burn.

These heads are fitted with or without the Self-Centering Sleeve, and made Expansion or Solid, to suit the customer's wishes.

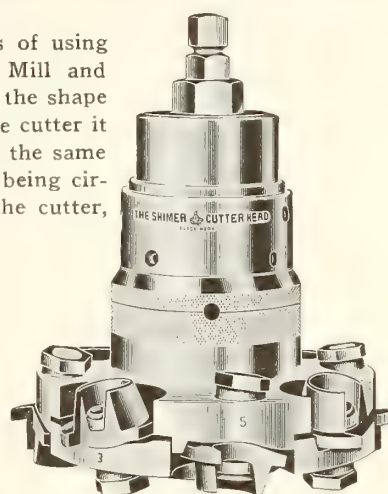


Fig. 268

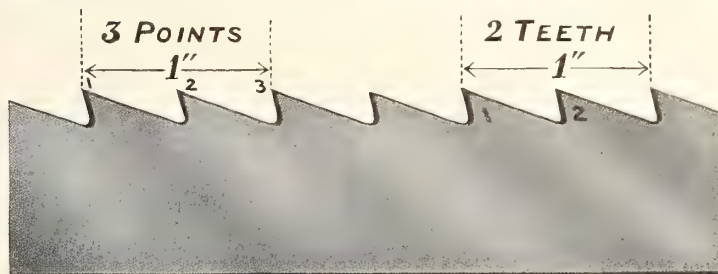
Shimer Heads have been in use for sixty years, and their reliability and reputation have spoken for them in the past. Let us know your wants and we will guarantee their reliability at the present.

SHIMER CUTTER HEAD CO. OF CANADA, LIMITED

Successors to Samuel J. Shimer & Sons, Inc.

GALT, ONTARIO

NARROW BAND SAWS



NOTE—When measuring points count the points at each end of inch, as per illustration. 3 points are to teeth, etc.

NARROW BAND SAWS ARE FURNISHED SET AND FILED, NOT BRAZED

Give full particulars when ordering.

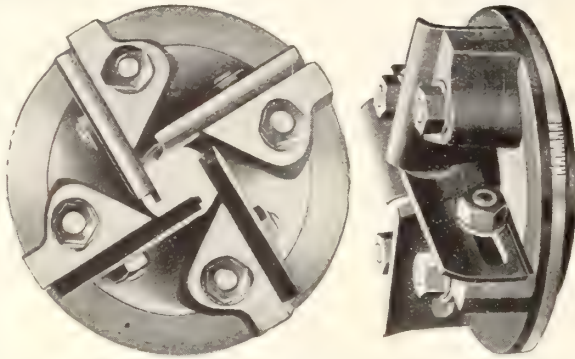
RADCLIFF Beaver Brand Narrow Band or Scroll Saws are Good Saws.

We use only best quality Swedish steel in their manufacture, evenly set and filed. They will give you real service under all conditions.

A trial order will convince you

Radcliff Saw Manufacturing Company, Limited

1550 Dundas Street St. West, TORONTO

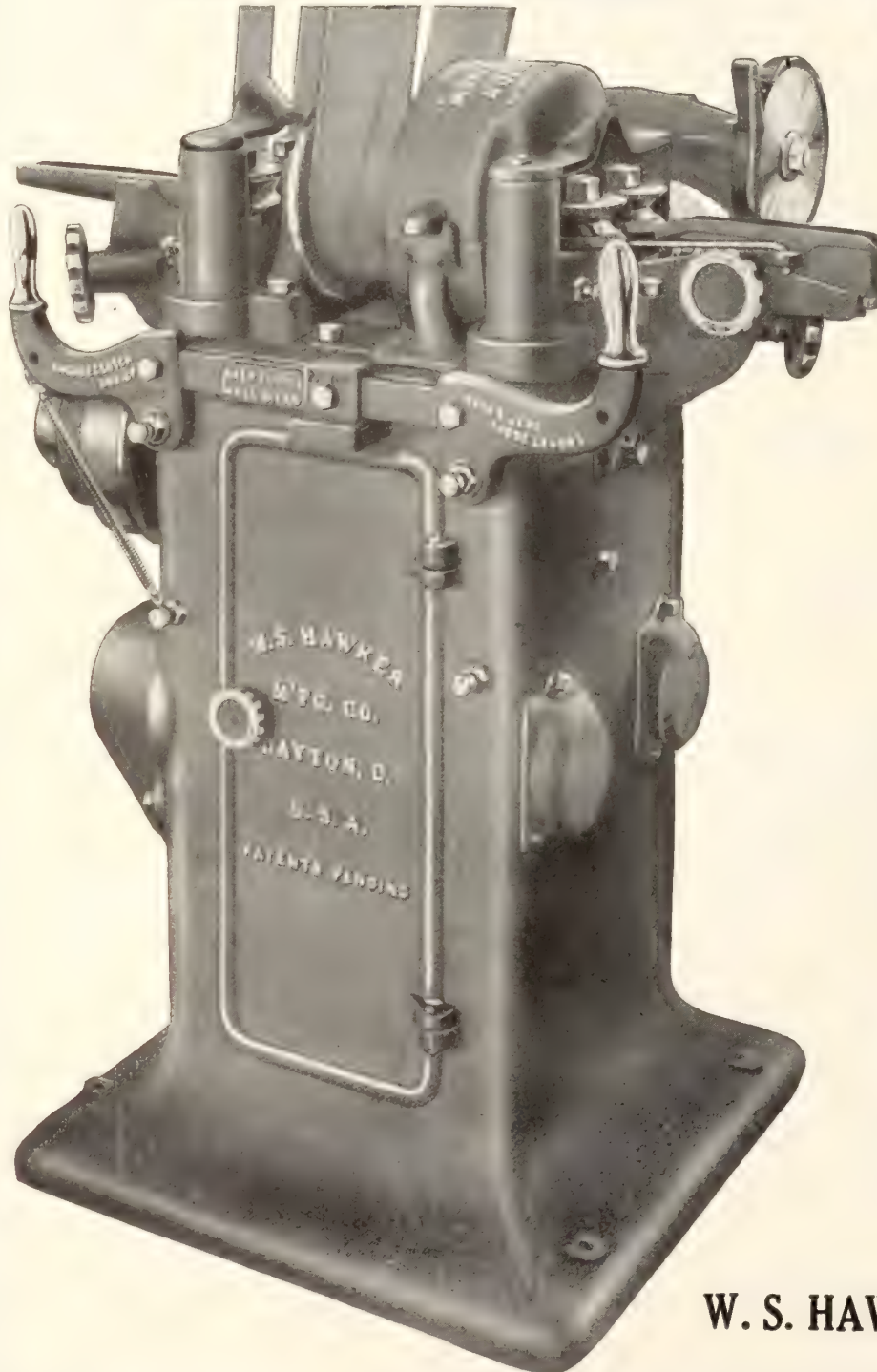


UNIVERSAL ADJUSTABLE CUTTER HEAD Patented.
Infringements (maker or user) will be vigorously prosecuted.

Two Heads

that have put
100% more profit
in the production
of Dowel Stock.

FOR SHIP TREENAILS



W. S. HAWKER.

Inventor and Designer of the World's most
efficient Tubular Turning Machinery

THE Money Maker Adjustable Rod and Dowel Machine

The machine that is sent under a guarantee
to show you a gain of from 100 to 400 per cent.
before you buy it.

The improved dowel machine that 90 per
cent. of the largest and oldest machinery build-
ers and dealers now endorse and recommend in
preference to the solid chuck machines they
themselves previously built.

One cutter head turns from 1/4 in. to 2 in.
diameter.

Turns hard or soft wood equally well.

Handles heavy, oversized squares.

No choking of the cutter head.

Smooth stock.

Accurate sizes.

Works stock as short as five inches.

Rolls automatically centre variations in
squares.

Machines built to turn from 1/8 to 6 in.

We want to hear from every user of a solid
chuck dowel machine.

We can save you from one dollar out of
every two, to four out of every five, that the
operation of solid chuck machines costs you.

Engagements for competitive test solicited.

Formal orders not solicited. All sales made
after demonstration.

The only question is, are you willing to cut
cost of your dowel turning to one-half or one-
third of what it costs with any make of solid
chuck machine?

Machine delivers the goods before you buy.

State conditions of stock closely.

Special conditions require special equipment.

W. S. HAWKER MFG. COMPANY

DAYTON, OHIO.

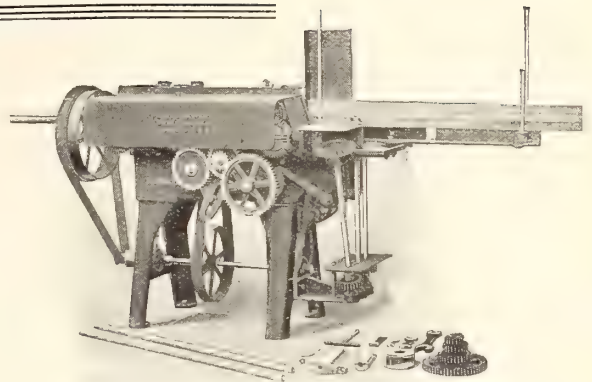
DEFIANCE AUTOMATICS

THAT TURN OUT HANDLES
IN A STEADY STREAM

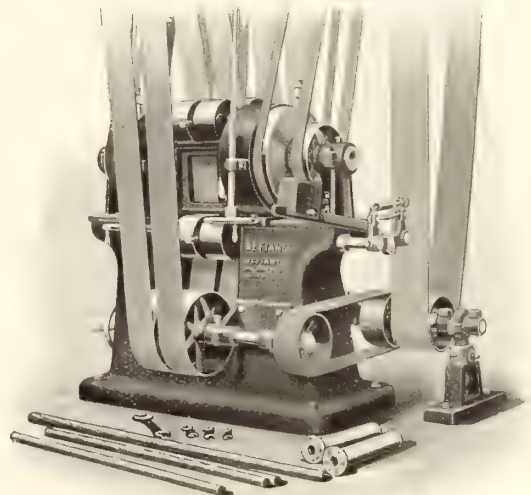
With little or no attention other than keeping the hopper filled with stock, the Defiance Chaplin Automatic continually turns out a steady stream of handles. Its feed rate ranges up to 2800 feet per hour. It stands up under heavy strain for a long period of use. There's no upkeep cost worthy of mention. Accuracy and uniformity are guaranteed in either straight, tapered, or swelled

shapes. These machines are serving owners the world over with big output in turning broom, rake, and hoe handles, golf sticks, curtain, flag, and pike poles, fishing rods, whip stocks, vienna chair backs, etc. Defiance handle making equipments cover every phase of handle making. They make handles for small tools, brushes, hammers, hatchets, picks, axes, shovels, plows, etc.

Illustrated and descriptive matter on your requirements in handle making machinery will be mailed on request.



Chaplin Patent Automatic Handle Lathe
No. 2 Patent Automatic Handle Polishing Machine



The Defiance Machine Works

DEFIANCE, OHIO, U. S. A.

New York

London

You Have Paid for an Installation of **Chapman Double Ball Bearings**

in Your Factory over and
over again, BUT—

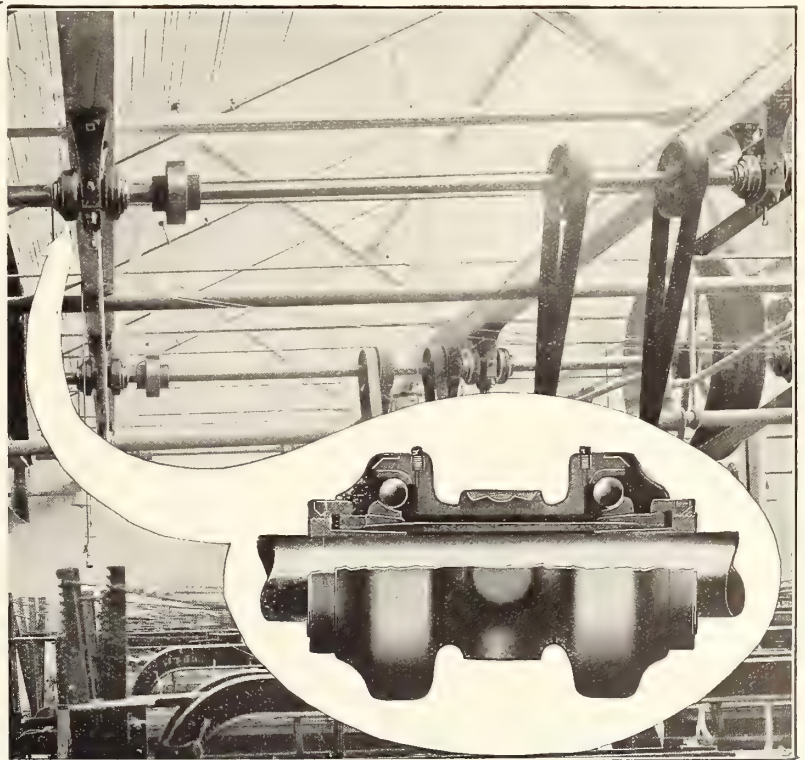
HAVE YOU GOT THEM?

Ordinary line shafting wastes 15 per cent. to 60 per cent. of power.

Line shafting equipped with Chapman Double Ball Bearings will eliminate about 75 per cent. of the friction, thus averaging a total saving of from 15 per cent. to 30 per cent.

Chapman Double Ball Bearings fit any adjustable hanger and require oiling and attention only once a year. No extra equipment required to install.

Send for Catalog No. 3 C.



The Chapman Double Ball Bearing Co. of Canada, Limited

Toronto

339-351 Sorauren Ave.

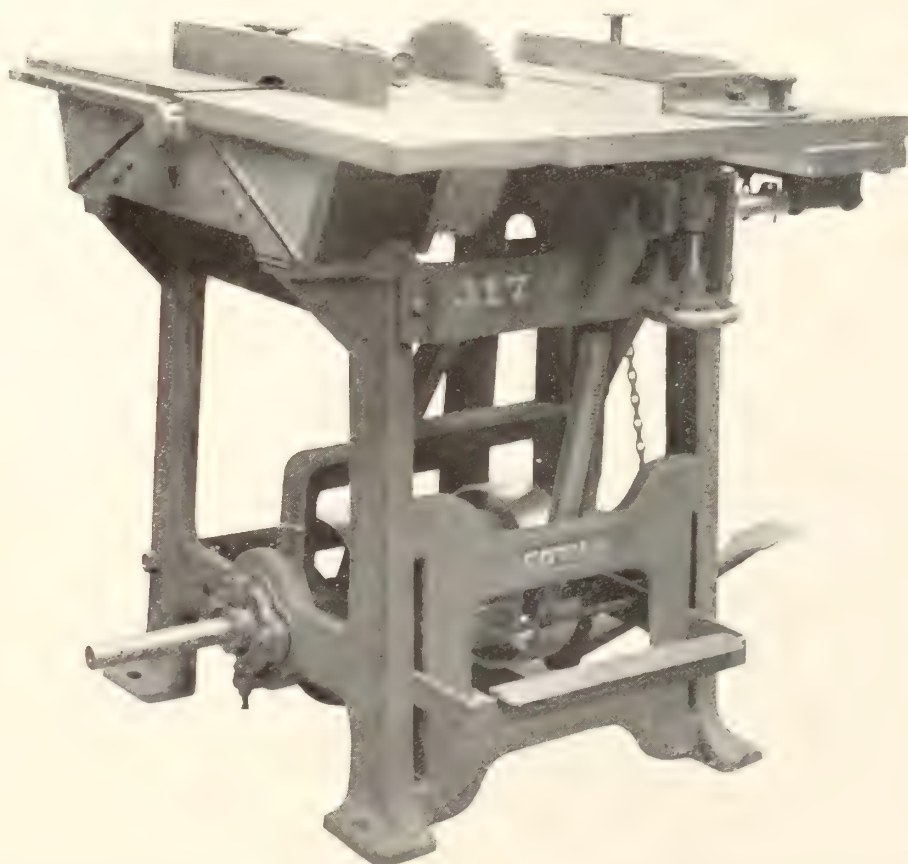
Ontario

American Branch: The Transmission Ball Bearing Co., Inc., 32 Wells St., Buffalo, N.Y.

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Combination Woodworker 317

Cross Cut, Mitre and
Rip Saw

6" Buzz Planer, Borer
and Mortiser

Substantially Built
Easily Portable

Goes Through 32"
Opening

**Cowan & Company
of Galt Limited**

GALT

ONTARIO

"Treat your machine
as a living friend"

SAVE

In Your Veneer Room

50% of Your Present Labor Cost

Four Men to do the Work of Eight!

Keen competition is ahead of you.

To compete **successfully** your equipment should include :

A "Black Bros." Veneer Taping Machine

Let us place one with you on trial and prove—*That it will cut your Labor Cost in two.*

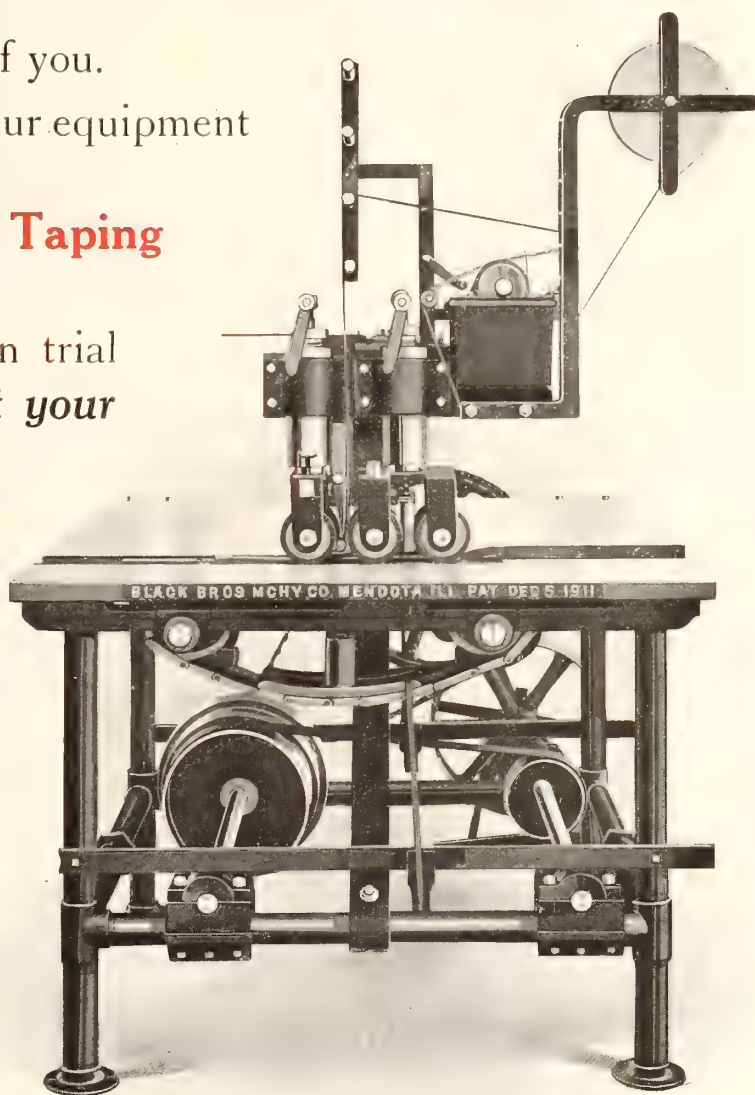
This machine will tape together all kinds of Veneer, no matter whether it be thick or thin, handling both kinds equally well.

It will use the ordinary gum tape, or it will use plain paper tape and put on its own gum or glue just before it is laid.

Built in two sizes—24 in. and 36 in.

**Ask for prices and
particulars**

WE CONTROL THE CANADIAN PATENT
ON THIS MACHINE



"Black Bros." Patented Veneer Taping Machine

The Preston Woodworking Machinery Co.

Preston, Ontario, Canada Limited

Red Gum Sap Gum Oak Tupelo

We carry a well assorted stock ready for immediate shipment of all Southern Hardwoods. Make a specialty of loading mixed cars of various grades and thicknesses for the factory trade. We issue a monthly stock sheet showing at a glance delivered prices on everything we have ready for shipment. If you are not receiving these lists, please write us.

P. J. Lawrence Lumber Co.

Sales Office

Syndicate Trust Bldg. St. Louis, Mo., U.S.A.

Quality First—Service Always

The quality, figure and texture of our lumber is unsurpassed by any mills in any vicinity.

We offer the following items, thoroughly dry, on which we are in position to make immediate shipment.

ASH		POPLAR	
6,000'	4/4 1s and 2s	10,000'	4/4" 1s and 2s S N D
9,000'	5 1 1s and 2s	10,000'	5/4 1s and 2s S N D 12"
12,000'	8/4 1s and 2s		and up
10,000'	4/4 No. 1 Common	20,000'	5/4 No. 2-A Common
10,000'	8 4 No. 1 Common	5,000'	4/4 Box Boards, 13" and 17"
10,000'	4/4 No. 2 Common		
OAK, PLAIN RED		QUARTERED SYCAMORE	
8,500'	4/4" 1s and 2s Saps	4,200'	4/4" 1s and 2s, 12" & up
12,000'	4/4 1s and 2s	1,800'	4/4 1s and 2s
5,000'	6/4 1s and 2s	11,000'	5/4 1s and 2s
20,000'	4/4 No. 1 Common	10,000'	4/4 No. 1 Common
10,000'	6/4 No. 2 Common	6,000'	5/4 No. 1 Common
OAK, PLAIN WHITE		WALNUT	
10,000'	5/4" 1s and 2s	5,000'	5/8" 1s and 2s
7,500'	8/4 1s and 2s	16,000'	4/4 1s and 2s
30,000'	4/4 No. 1 Common	7,000'	4/4 1s and 2s, 8" & up
20,000'	5/4 No. 1 Common	5,000'	8/4 1s and 2s
8,700'	8/4 No. 1 Common	20,000'	5/8 No. 1 Common
OAK, QUARTERED WHITE		15,000'	4/4 No. 1 Common
4,500'	5/4" 1s and 2s	15,000'	5/4 No. 1 Common
1,500'	6/4 1s and 2s	21,000'	6/4 No. 1 Common
4,000'	8/4 1s and 2s	60,000'	4/4 No. 2 Common
7,000'	4/4 Sel. 6" & up, 6' & up	10,000'	5/4 No. 2 Common
5,000'	5/8 Selects	5,000'	8/4 No. 2 Common
10,000'	4/4 No. 1 C., 10" & up	MIXED OAK	
30,000'	5/4 No. 1 Common	5,300'	9/4" No. 1 Com. & Btr.
6,000'	6/4 No. 1 Common	16,200'	10/4 No. 1 Com. & Btr.
8,000'	8/4 No. 1 Common	11,000'	12/4 No. 1 Com. & Btr.
		1,200'	14/4 No. 1 Com. & Btr.

Send us your inquiries for Ash, Beech, Cottonwood, Elm, Gum, Hickory, Oak, Poplar, Sycamore, and Walnut.

J. V. Stimson & Co., Owensboro Ky.

When Dry Lumber Gets Scarce Remember !

Our dry-kiln is at your service—500,000 feet per month capacity and 10,000,000 feet of lumber from our own band-mills to draw upon.

James E. Stark & Co., Inc.
MEMPHIS, TENN.

Bone Dry

Right now dry lumber is scarce. Here's a list of dry stock ready for prompt shipment. Remember there's 30 years' experience back of every board.

- 1 car 5/8 FAS Plain Red Oak.
- 1 car 5/8 No. 1 Com. Plain Red Oak.
- 10 cars 4/4 No. 2 Com. and Btr. Plain Red Oak.
- 1 car 5/4 FAS Plain Red Oak.
- 1 car 5/4 No. 1 Com. Plain Red Oak.
- 2 cars 6/4 FAS Plain Red Oak.
- 2 cars 6/4 No. 1 Com. Plain Red Oak.
- 1 car 8/4 FAS Plain Red Oak.
- 1 car 8/4 No. 1 Com. Plain Red Oak.
- 3 cars 10/4 FAS Plain Red Oak.
- 1 car 10/4 No. 1 Com. Plain Red Oak.

*Write for our Complete List
with Prices*

North Vernon Lumber Co.
NORTH VERNON, IND.
LOUISVILLE, KY. DYERSBURG, TENN.
Every Board Branded "NVLCO." Quality Guaranteed



OUR REPUTATION

for quality Walnut has been established, and will be maintained, with the furniture manufacturers everywhere. They know that for quality service and beauty Hartzell's Walnut is yet unbeaten. For thirty-seven years we have been turning out

"Hartzell's Choice Walnut"

to meet the demands of the best of furniture manufacturers. We have studied the problems of Walnut production and have succeeded in making Walnut the most popular wood of the present day. Hartzell's Walnut is direct from the greatest Walnut territories of the United States—Ohio and Indiana.

Tell us what kind of stock you have been using, and in what grades. The chances are we can assist you materially.

We also have Veneers, Lumber, Dimension and Panels of the best quality.

Geo. W. Hartzell
PIQUA, OHIO

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Newman Sons, John P.	90	Shurly Dietrich Company	90	Williams Machinery Co., A. R.	80
Nickey Bros.	73	Silver Mfg. Company	88	Wood-Mosaic Company	62
Northwestern Cooperage & Lbr. Co.	64	Simonds Canada Saw Company	89	Yates Machine Co., Ltd., P. B.	5
North Vernon Lumber Co.	12				

DRY STOCK

Ready for Immediate Shipment

GUM

24,009' 4/4 1st & 2nds Red Gum, Botany Bay	
23,121' 4/4 1st & 2nds Sap Gum	
22,568' 4/4 No. 1 Com. Red	
35,421' 4/4 No. 1 Com. & Sel. Sap	
67,947' 4/4 No. 2 Com.	
3,000' 6/4 1st & 2ds Red	Whelan
6,000' 5/4 No. 1 Com. & Sel Red	
33,017' 6/4 No. 2 Com. Sap	
8,000' 5/4 No. 3	
11,800' 1 x 9-12" Box Boards	
21,305' 1 x 13-17"	
24,121' 4/4 1st & 2ds Sap Gum	
51,242' 4/4 No. 1 Com.	
19,126' 4/4 No. 2	
21,428' 4/4 1st & 2ds Red Gum	Jonesville
23,291' 4/4 No. 1 Com.	
11,428' 4/4 No. 2	
11,212' 4/4 1st & 2ds Sap	
22,481' 4/4 No. 1 Com.	
1,350' 5/4 No. 1 Com. Red	
104,049' 5/4 No. 2 Com. Sap	
2,341' 6/4 1st & 2ds Sap	Issaquena
2,512' 6/4 No. 1 Com.	
2,375' 6/4 No. 2	
11,428' 4/4 No. 1 Red	
26,119' 4/4 No. 2 Com. Sap	

LA. CYPRESS

11,429' 4/4 1st & 2ds	Jonesville
11,428' 4/4 Select	
32,428' 4/4 No. 1 Shop	
56,249' 4/4 No. 1 Common	
13,241' 6/4 1st & 2ds	
11,708' 6/4 Select	
12,101' 6/4 No. 1 Shop	
5,300' 6/4 No. 1 Common	
10,300' 6/4 No. 2 Common	
10,478' 8/4 No. 1 Common	
22,495' 8/4 No. 2 Common	
7,937' 4/4 No. 1 Common	Botany Bay
11,450' 4/4 No. 2 Common	
11,242' 4/4 No. 1 Shop	

RED OAK

11,241' 4/4 No. 1 Com. & Sel. Mixed, Botany Bay	
23,121' 4/4 1st & 2ds	Jonesville
36,221' 4/4 No. 1 Com. & Sel	
21,003' 4/4 No. 2 Com.	
1,500' 8/4 1st & 2ds	
36,987' 10/4 FAS & 30% No. 1 Com.	

13,425' 3/4 No. 3 Com	Issaquena
10,000' 6/4 No. 1 Com. Pl	
30% FAS 70% White	
24,196' 4/4 No. 2 Com. & Btr. 8' Tie Siding	
11,249' 5/4 No. 1 Com. Red Oak	
11,041' 5/4 No. 1 Com. White Oak	

LA. WHITE ASH

20,350' 5/4 No. 2 Com., Botany Bay	
14,741' 6/4 No. 2 Com.	
4,773' 8/4 No. 2 Com.	
19,724' 5/4 No. 3 Com.	
3,850' 8/4 No. 3 Com.	

COTTONWOOD

8,000' 4/4 No. 1 Com.	Jonesville
780' 1 x 7-17" Box Boards	
1,320' 4/4 No. 2 Com.	
500' 8/4 Dog Boards	

MISSISSIPPI ELM

12,428' 8/4 Log Run, Botany Bay	
4,580' 12/4 Log Run, Jonesville	
37,116' 6/4 Log Run, Jonesville & Issaquena	

6/4 & 8/4 DOG BOARDS

46,200' Cypress, Jonesville	
7,440' Elm, Jonesville	
9,328' Gum, Botany Bay	

ABERDEEN LUMBER COMPANY
PITTSBURGH, PA.

Hardwood Headquarters

Exceptional facilities for giving our present customers just exactly what they require is one of the reasons they continue to send their orders to "Hardwood Headquarters." We want to be given a chance to extend this satisfactory service to you.

Partial List of Stocks on Hand

75 M' 10/4 Log Run Sycamore
16 M' 10/4 No. 3 Common Sycamore
20 M' 4/4 Log Run Locust
45 M' 4/4 Log Run Tupelo
18 M' 4/4 No. 1 Com. Qtd. Red Oak
70 M' 4/4 No. 2 Com. Plain White Oak
83 M' 4/4 No. 3 Com. Plain White Oak
36 M' 4/4 No. 1 Com. Plain Red Oak

50 M' 4/4 Cottonwood Box Boards, 9"-12"
15 M' 4/4 FAS Cottonwood
48 M' 4/4 FAS Sap Gum, 12" and up
65 M' 4/4 FAS Sap Gum, 6"-12"
163 M' 4/4 No. 2 Common Sap Gum
72 M' 4/4 No. 3 Common Sap Gum
60 M' 6/4 No. 1 Com. Sap Gum
90 M' 3/4 No. 1 Com. & Btr. Qtd. Red Gum



Memphis Bandmill Co.
Memphis, Tenn., U.S.A.



I have the following cars in transit, all West Virginia stock, good widths & lengths

Can make immediate shipment of Crating lumber, Excelsior and Wood wool.

Car No.	142081	8/4"	FAS Pln. White Oak, good widths..	13,000'
"	70221	8/4"	FAS & Sel. "	17,000'
"	4517	5/4"	FAS Pln. Red	2,541'
"		5/4"	Selects	4,000'
"		6/4"	FAS	4,700'
"		6/4"	Selects	1,470'
"	38783	4/4"	FAS & Sel. Pln. Wh Oak	15,253'
"	121367	4/4"	No. 1 Com. Plain Red Oak	15,000'
"	204782	8/4"	Sound Wormy Chestnut	19,000'
"	18089	8/4"	"	20,000'
"	17700	8/4"	"	15,434'
"	6031	8/4"	"	16,700'
"	91352	6/4"	"	15,000'
"	120259	6/4"	"	17,500'
"	79485	6/4"	"	18,000'
"	49441	5/4"	"	14,000'
"	21037	5/4"	"	13,000'
"	74440	5/4"	"	13,000'
"	504	4/4"	"	14,000'
"	220317	4/4"	"	17,000'

Write, Wire or Phone Your Inquiries

PERCY E. HEENEY

202 Weber Chambers, KITCHENER, ONT.

BLACK WALNUT

Large Stock ready for immediate shipment, also Well Assorted Stocks at our Yards and Mills

in West Virginia and Kentucky

OAK

Maple, Hickory, Chestnut
Basswood and Poplar

Prices and stock list on request

Burns & Knapp

Lumber Company

CONNEAUTVILLE, PA.

Dry Spruce and Birch

Good Stocks, Prompt Shipments, Satisfaction

C. A. SPENCER, Limited

Wholesale Dealers in Rough and Dressed Lumber

Offices—500 McGill Building
MONTREAL - - - Quebec

POPLAR GUM BIRCH

For prompt shipment we carry in stock large quantities of Rotary Cut, Sliced and Sawed Veneers and Southern Hardwood Lumber.

Send us your inquiries—our prices and service will insure future business.

Christmann Veneer & Lumber Co.

3750 N. Second St., St. Louis, Mo.

MAHOGANY WALNUT OAK

F. T. DOOLEY, President.

T. E. JONES, Secy.-Treas.

F. T. Dooley Lumber Co.
Inc.

MANUFACTURERS and WHOLESALERS
of

SOUTHERN HARDWOODS

Plain and Quartered Oak
Cypress, Gum, Ash
Soft Maple and Elm

Send us your inquiries

Memphis ∴ ∴ Tennessee

Hardwoods

We can furnish you immediately Factory Stock including all grades and thicknesses of

Walnut, Chestnut
Mahogany, Teak, Oak
Ash, Cypress

ALSO

VENEERS

Oak, Maple, Walnut and
other Fancy Woods

The McLennan Lumber Co.

Limited

MONTREAL

American Hardwood Lumber Co.

St. Louis, Mo.

Large stock of—

**Dry Ash, Quartered Oak
Plain Oak and Gum**

Shipments from — NASHVILLE, Tenn.,
NEW ORLEANS, La., and BENTON, Ark.

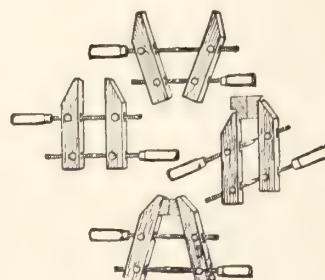
Adjustable Clamp Company

216 N. Jefferson St., Chicago, U.S.A.

Manufacturers of the

"JORGENSEN"

the Original
Adjustable Steel
Spindle Clamp



Adjustable to any position. Well made to give the service. Efficient in every way they are bound to win your approval.

If you cannot buy them from your Jobber write us direct.

Indiana

Quartered Red and White

OAK

1,000,000 feet of dry stock carried
at all times

ALSO PLAIN OAK AND ASH

We manufacture all stock carried

Evansville Band Mill Co.

FRANK M. CUTSINGER, Pres.
GEO. H. FOOTE, Vice-Pres. & Treas.
JOSEPH WALTMAN, Secretary

Mills at EVANSVILLE, Indiana

"Gum of Quality"

Yazoo River Red Gum

as produced by

Thomas & Proetz Lumber
Company

No. 3400 Hall St. St. Louis, Mo.

is carefully manufactured; soft
in texture; dark, rich in color;
and admirably suited for furni-
ture and interior trim.

Mills—Belzoni, Miss.; Catchings, Miss.
Naples, La.

If you are not buying from us, write today.

Perfection in Quality and Service

Service that is prompt and accurate is a big factor in our dealings and at the same time the acme of quality always prevails. We make a specialty of supplying Sap, Red Gum, Crating and Southern Hardwoods. Let us know your requirements in factory stock including all grades and thicknesses of Cypress, Sap, Red Tupelo and Black Gum, Cottonwood, Oak, Elm, Sycamore and Ash. We can ship immediately on receipt of your order.

Cornelius Lumber Company
ST. LOUIS, Mo., U. S. A.

ATTENTION:

"Auto Body and Furn. Manfgs."

We are one of the few firms
in the country handling

White Ash Exclusively

We sort it to meet all requirements. **Tough** texture and **Medium** texture. Can furnish **Special Widths** and **Lengths** one to four inches thick. Write or wire when needing WHITE ASH.

THOMPSON, KATZ LUMBER CO.
Memphis, Tenn.
Cable Address "TomKats"

Two Conclusive Proofs Why You Should Buy Your Lumber From Us



Examine closely the picture above, then read the following letter we received a few days ago from one of the largest manufacturers of Mouldings in the world. (Lumber for Mouldings must be absolutely flat and straight.)

"We have been using exclusively gum lumber, both sap and red, shipped by you for the last three years, and have been well pleased with its character, both as to grade and condition. The condition of same being an evidence of careful handling before shipping. We have been well pleased with the transactions which we have had with you, and will endeavor to continue using your stock as long as available."

We also manufacture Oak, Ash, Elm, and Cypress at Louise, Miss., mills. Get our prices before placing your orders and become a SATISFIED user of Gum or one of the other Southern hardwoods.

BARR-HOLADAY LUMBER CO.

GREENFIELD - OHIO

WE HANDLE BIRCH ALSO Dry Stock on Hand for Quick Shipment

At Trout Creek, Ont.

60,000	ft. 4/4	No. 1	Com. & Bet.	Birch.
66,000	" 5/4	"	"	"
7,000	" 6/4	"	"	"
26,000	" 8/4	"	"	"
20,000	" 12/4	"	"	"
14,000	" 16/4	"	"	"
190,000	" 4/4	No. 2 & 3	Com.	Birch.

At Lake Rosseau, Ont.

150,000	ft. 4/4	No. 3	Com. & Bet.	Birch
45,000	" 5/4	No. 2	"	"
45,000	" 8/4	"	"	"
15,000	" 10/4	No. 1	"	"
28,000	" 12/4	"	"	"
15,000	" 16/4	"	"	"

We advise Birch users to place their orders now. Immense quantities are being shipped to the United States and it is our opinion that prices will shortly advance from 10 to 25 per cent. in sympathy with American Hardwoods.

The Atlantic Lumber Company

310 Manning Chambers, TORONTO

Yards: BUFFALO, N.Y.

Mills: KNOXVILLE, Tenn.; FONDE, Kentucky.



Band Mill and Yards, Memphis Plant

We Desire to Emphasize the Fact That All Stock Listed is Dry and Ready for Immediate Shipment, with the Exception of Items Marked * which are 30 to 60 Days Dry.

PLAIN RED OAK

*15M 4/4 1s and 2s
80M 5/4 1s and 2s
100M 6/4 1s and 2s
50M 8/4 1s and 2s
12M 10/4 Com. & Btr.
110M 11/4 Com. & Btr.
117M 12/4 Com. & Btr.
25M 15/4 Com. & Btr.
*15M 4/4 No. 1 Com.
70M 5/4 No. 1 Com.
150M 6/4 No. 1 Com.
50M 8/4 No. 1 Com.
14M 5/4 No. 2 Com.
75M 6/4 No. 2 Com.
100M 6/4 No. 2 & 3 Com.
60M 4/4 to 8/4 No. 3 C.

ASH

7M 5/4 1s and 2s
10M 4/4 No. 2 Com.
55M 6/4 No. 2 Com.

TUPELO

10M 4/4 1s and 2s
5M 6/4 1s and 2s
15M 4/4 No. 1 Com.

CYPRESS

14M 4/4 Com.
7M 6/4 Com.

GUM BOX BOARDS

35M 9-12

PLAIN WHITE OAK

25M 6/4 No. 1 Com.
2M 10/4 Com. & Btr.
38M 11/4 Com. & Btr.
1M 12/4 Com. & Btr.
7M 15/4 Com. & Btr.
18M 10-12/4 No. 1 Com.
4M 4/4 No. 2 Com.
25M 6/4 No. 2 Com.

C. & B. PL. RED GUM

15M 4/4 FAS 12" and up
50M 4/4 1s and 2s
6M 5/4 1s and 2s
8M 5/4 No. 1 Com.
60M 6/4 No. 1 Com.
30M 4/4 No. 2 Com.

C. & B. QRT'D RED GUM

9M 4/4 Com. & Btr.

QRT'D RED OAK

1M 6/4 1s and 2s

LOG RUN ELM

12M 4/4
37M 6/4
35M 8/4
15M 10/4
15M 12/4
10M 5/4 to 6/4 No. 3
7M 6/4 No. 2

QRT'D WHITE OAK

5M 4/4 10" and up
*15M 4/4 1s and 2s
*15M 4/4 No. 1 Com.
5M 8/4 No. 1 Com.
1M 10/4 No. 1 Com.
8M 6/4 No. 2 Com.
2M 8/4 No. 2 Com.

PLAIN SAP GUM

8M 4/4 wide Com.
15M 4/4 1s and 2s
*15M 5/4 1s and 2s
*150M 6/4 1s and 2s
*100M 6/4 No. 1 Com.
100M 5/4 No. 1 Com.
125M 4/4 No. 2 Com.
60M 5/4 No. 2 Com.
120M 6/4 No. 2 Com.
25M 4/4 No. 3 Com.
15M 5/4 No. 3 Com.
7M 12/4 No. 3 Com.

QUARTERED SAP GUM

14M 10/4 No. 2 Com.
11M 12/4 No. 2 Com.

OAK BRIDGE PLANK

50M 12/4 6" and up

HICKORY

9M 8/4 L. R.
15M 6/4 No. 3 Com.
1M 10/4 No. 3 Com.

We make a specialty of Quarter Sawn Red Gum, Sap no Defect, and are in position to contract for a limited amount of 6/4 to 12/4 C. & B. Qtd. Sawn Red Gum, Sap no Defect, for late fall delivery. If you are in the market for some of this stock, we will appreciate an opportunity of quoting on your requirements.

"DIRECT FROM PRODUCER TO CONSUMER"

WIRE YOUR ORDER AT OUR EXPENSE

GAYOSO LUMBER COMPANY

MEMPHIS, TENNESSEE



BELLGRADE LUMBER CO.

MEMPHIS, TENN.

Manufacturers of High Class

Southern Hardwoods

Band Mills at — ISOLA, MISSISSIPPI. LOUISE, MISSISSIPPI AND CARY, MISSISSIPPI

We offer for immediate shipment and subject to prior sale the following desirable dry stock from our own mills

QUARTERED WHITE OAK 1,500' 4/4" 1s and 2s (dry).	QUARTERED RED GUM 50,000' 4/4" No. 1 Common. 30,000' 5/4" No. 1 Common. 5,000' 6/4" No. 1 Common. 3,000' 8/4" No. 1 Common. 2,000' 10/4" No. 1 Common.	12,000' 8/4" No. 1 Com. & Btr. 25,000' 10/4" No. 1 Com. & Btr. 15,000' 12/4" No. 1 Com. & Btr.	PLAIN SAP GUM 15,000' 4/4" 1s and 2s. 5,000' 5/4" 1s and 2s. 5,000' 6/4" 1s and 2s. 6,000' 8/4" 1s and 2s.
PLAIN WHITE OAK 6,000' 4/4" 1s and 2s.	QUARTERED RED GUM Sap No Defect. 15,000' 5/4" No. 1 Com. & Btr.	PLAIN RED GUM 20,000' 4/4" No. 1 Common. 30,000' 5/4" No. 1 Common. 3,000' 6/4" No. 1 Common. 2,000' 8/4" No. 1 Common.	30,000' 4/4" No. 1 Common 20,000' 5/4" No. 1 Common 5,000' 6/4" No. 1 Common 5,000' 8/4" No. 1 Common
PLAIN RED OAK 25,000' 4/4" 1s and 2s. 45,000' 4/4" No. 1 Common.			

Your inquiries by wire will have prompt and careful attention

RED GUM

"AMERICA'S FINEST CABINET WOOD"

The really successful merchant, it matters not in what line, is he who takes the trouble to ascertain

WHAT THE PUBLIC WANTS

This is especially true in its application to the furniture manufacturer and his retailer. He *has to* study his public—or he soon will have no public.

That portion of his public which is influenced by the principles of good taste wants RED GUM furniture—Why? Because the color, grain and soft, velvety quality of this, the finest of America's cabinet woods, when handled by a master cabinet-maker, results in a thoroughly charming piece of furniture—the kind that people of nice discrimination like to have around—and want strongly enough to *ask for*. Then can YOU supply it?

Makers and dealers desiring to see samples of RED GUM, both rough and finished, are invited to correspond with us at once.

GUM LUMBER MANUFACTURERS' ASSOCIATION

1314 Bank of Commerce Bldg., Memphis, Tennessee.

Dry Basswood

500,000 Ft. 1 inch

50,000 Ft. 1½ inch

30,000 Ft. 2 inch

Edward Clark & Sons, Ltd.

807-9 Bank of Hamilton Bldg., Toronto

Quality Dry Stock

—and Immediate Shipment

WE are fully prepared to give this most desirable combination. Our Service Yard at Logansport, Indiana on a railroad division point puts us in a position to get cars for quick delivery. A partial inventory of our High Class Furniture Dry Stock follows:

SOFT ELM				PLAIN OAK			
5/8"	FAS, No. 1 & 2 Com.	16,400'	1"	FAS & No. 1 Com.	41,200'		
1"	FAS, No. 1 & 2 Com.	13,200'	2"	FAS & No. 1 Com.	27,000'		
1½"	FAS & No. 1 Common	15,600'	2½"	FAS & No. 1 Com.	30,000'		
2"	FAS & No. 1 Common	47,200'	3"	FAS & No. 1 Com.	30,000'		
2½"	FAS & No. 1 Common	28,700'	4"	FAS & No. 1 Com.	35,586'		
3"	FAS & No. 1 Common	48,000'					
SOFT MAPLE				BASSWOOD			
1½"	FAS, No. 1 & 2 Com.	12,400'	1"	FAS No. 1 & 2 Com.	15,600'		
			3"	FAS No. 1 & 2 Com.	12,200'		
HARD MAPLE				CRATING			
1½"	FAS & No. 1 Com.	15,188'	¾"	Elm	1 car		
1¾"	FAS & No. 1 Com.	12,373'	1"	Elm	1 car		
2"	FAS & No. 1 Com.	45,200'	1½"	Elm	1 car		
2½"	FAS & No. 1 Com.	240,000'	¾"	Beech & Maple ...	1 car		
3"	FAS & No. 1 Com.	39,499'	1"	Beech & Maple ...	2 cars		
WALNUT				HACKBERRY			
1"	FAS, No. 1 & 2 Com.	9,200'	2"	FAS No. 1 & 2 Com.	7,836'		

John I. Shafer Hardwood Co.
SOUTH BEND - INDIANA

**H. W. Darby Hardwood
Lumber Company**

Manufacturers of

Hardwood Lumber

Red and Sap Gum a Specialty

Gum, Oak, Tupelo, Poplar
Ash, Elm, Cypress

Rooms 1531-33 Bank of Commerce & Trust Bldg
MEMPHIS, TENN.

Mills at :

Kosciusko, Miss.
Greenwood Miss.

Money, Miss.
Ruleville, Miss.

HUNT, WASHINGTON & SMITH

Nashville, - Tennessee

Manufacturers of

Quartered and Plain White Oak

Poplar - Ash - Chestnut

Tennessee Red Cedar

Gum and Cypress

Canadian Representative

W. R. YOUMANS

1050 College St.

Toronto, Ontario

I O W A BLACK WALNUT

NO cabinet wood responds as fully to the art of the furniture designer or the skill of the workman, as American Black Walnut. It meets every requirement.

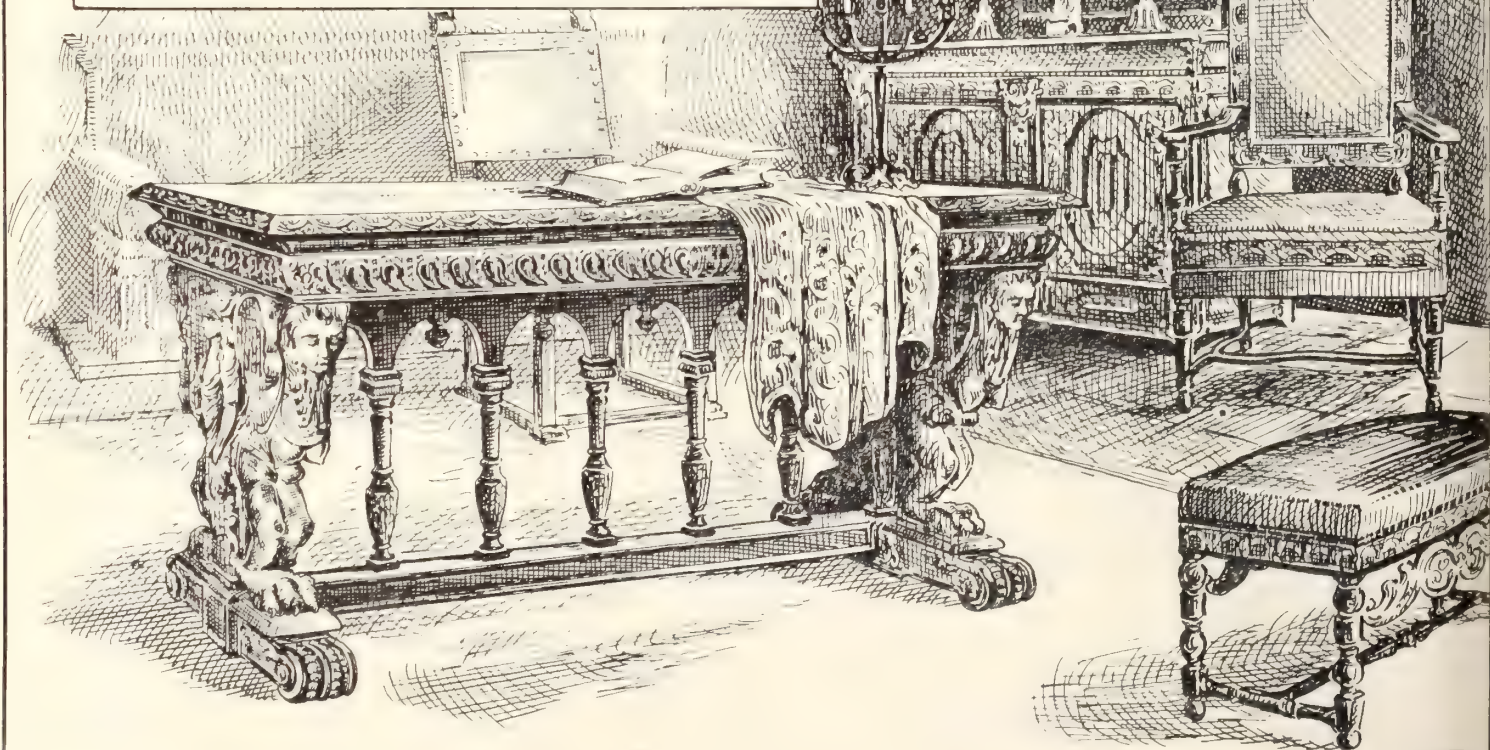
Furniture of Walnut possesses a lasting charm and beauty that age does not destroy and the liberal use of this wood in furniture factories, guarantees the quality of their product.

Our customers assure us IOWA WALNUT is superior to all other varieties for its texture, grain and beautiful coloring. We can prove this by our first shipment.

Send us your list of Walnut requirements in lumber and Veneers.

Des Moines Sawmill Co.

DES MOINES, IOWA



AMERICAN WALNUT

for Quality Products



American walnut is the only cabinet wood in the world market today on which the manufacturer can get prompt shipments of dry stock in all grades and thicknesses, and at reasonable prices.

In addition to the above unusual considerations, American Walnut is in a class by itself when it comes to universal appreciation of its superiority.

*Write for our Walnut Booklet which will be out Soon
It is interesting - and costs you nothing.*

American Walnut Manufacturers' Association
Room 425, 115 Broadway, New York.

St. Francis Basin Hardwoods

DRY STOCKS AVAILABLE FOR QUICK SHIPMENT

Tennessee Aromatic Red Cedar

DELIVERED PRICES AND DESCRIPTIONS CHEERFULLY FURNISHED

Oak Timbers Cut to Order

SAP GUM

	Feet
4/4" Common and Better Qtd.	50,000
8/4 Common and Better Qtd.	5,000
4/4 1st and 2nd—18" and up, Plain...	25,000
4/4 Box Boards, 13/17"	75,000
4/4 Box Boards 9/12"	50,000
4/4 1st and 2nd, 13/17"	35,000
4/4 No. 1, 2 and 3 Common	300,000
5/4 1st and 2nd	3,000
5/4 No. 1, 2 and 3 Common	18,000
6/4 No. 1, 2 and 3 Common	200,000
8/4 No. 1 and 2 Common	4,000

PLAIN RED GUM

	Feet
4/4 No. 1 Common	200,000
4/4 No. 2 Common	60,000
5/4 1st and 2nd	5,000
6/4 1st and 2nd	35,000
6/4 No. 1 Common	75,000

QUARTERED RED GUM

	Feet
3/4" Common and Better	600
5/4 1st and 2nd	1,000
6/4 No. 1 Common	8,000
10/4 Common and Better	4,000
12/4 Common and Better	23,000

FIGURED RED GUM

	Feet
4/4" 1st and 2nd Plain	12,000
4/4 No. 1 Com. Plain	10,000
6/4 Common and Better Plain	8,000
4/4 1st and 2nd Qtd.	20,000
8/4 1st and 2nd Qtd.	5,000
10/4 1st and 2nd Qtd.	9,000
12/4 1st and 2nd Qtd.	2,500

MISCELLANEOUS

	Feet
4/4" Shop and Btr. Cypress	6,000
4/4 No. 3 Ash	1,000
5/4 No. 3 Ash	6,000
6/4 No. 3 Ash	7,000
6/4 Log Run Cottonwood	4,000
4/4 Mill Run Persimmon	8,000
6/4 L. R. Hackberry	1,000

4/4 L. R. Pecan	700
5/4 L. R. Pecan	8,000
6/4 No. 3 Pecan	40,000
8/4 No. 3 Pecan	5,000

PLAIN RED OAK

	Feet
4/4" No. 2 Common	18,000
6/4 Common and Better	22,000
6/4 No. 2 Common	12,000
8/4 No. 2 Common	4,000

QUARTERED RED OAK

	Feet
6/4 No. 2 Common	3,000

PLAIN WHITE OAK

	Feet
4/4" No. 1 Common	30,000
6/4 No. 2 Common	4,000
6/4 No. 2 Common	30,000
10/4 Common and Better	20,000
12/4 Common and Better	13,000

QUARTERED WHITE OAK

	Feet
3/4" Common and Better	300
4/4 Common and Better Strips	4,000

MISCELLANEOUS OAK

	Feet
4/4" No. 2 and S. W.	7,500
5/4 No. 3 Common	5,000

SOFT ELM

	Feet
4/4" Log Run	150,000
5/4 Log Run	200,000
6/4 Log Run	150,000
4/4 No. 3 Common	25,000
5/4 No. 3 Common	3,000
6/4 No. 3 Common	50,000
(Elm cut to special order)	

SOFT MAPLE

	Feet
4/4" Log Run	3,000
5/4 Log Run	5,000
6/4 Log Run	25,000
12/4 Log Run	1,500

Tennessee Aromatic Red Cedar in straight carlots or mixed with hardwoods.

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67M	5/8	FAS	6	5/4	No. 2 Common
%	5/8	No. 1 Common	12	6/4	FAS
30	5/8	No. 2 Common	10	6/4	No. 1 Common
%	4/4	No. 1 Common	15	8/4	FAS
%	4/4	No. 2 Common	50	8/4	No. 1 Common
8	5/4	S.W.	4	10/4	FAS
8	6/4	No. 2 Common	50	10/4	No. 1 Common
14	10/4	No. 2 Common	100	12/4	No. 1 Common
6	12/4	No. 2 Common	9	16/4	No. 1 Common
ELM			PLAIN RED OAK		
15M	5/8	No. 2 Com. and Btr.	30M	4/4	FAS
100	4/4	No. 2 Com. and Btr.	75	4/4	No. 1 Common
4	8/4	No. 2 Com. and Btr.	50	4/4	No. 2 Common
30	10/4	No. 2 Com. and Btr.	45	4/4	No. 3 Common
150	12/4	No. 2 Com. and Btr.	50	5/4	FAS
44	10/4	No. 2 Com.	90	5/4	No. 1 Common
50	12/4	No. 2 Com.	90	5/4	No. 2 Common
34	16/4	No. 2 Com. and Btr.	12	5/4	No. 3 Common
TUPELO GUM			3	6/4	FAS
5M	4/4	FAS	4	6/4	No. 1 Common
2	4/4	NBBS	6	6/4	No. 2 Common
7	4/4	WBBS	15	8/4	FAS
30	4/4	No. 1 Common	90	8/4	No. 1 Common
%	4/4	No. 2 Com.	15	8/4	No. 2 Common
PLAIN RED GUM			45	8/4	No. 3 Common
30M	4/4	FAS	3	10/4	FAS
90	4/4	No. 1 Common	30	10/4	No. 1 Common
5	5/4	FAS	30	10/4	No. 2 Common
30	5/4	No. 1 Common	14	12/4	No. 2 Common
10	6/4	FAS	QUARTERED RED OAK		
30	6/4	No. 1 Common	15M	4/4	FAS
QUARTERED RED GUM			50	4/4	No. 1 Common
SM	4/4	FAS	34	4/4	No. 2 Common
90	4/4	No. 1 Common	12	5/4	FAS
5	5/4	FAS	33	5/4	No. 1 Common
12	5/4	No. 1 Common	17	5/4	No. 2 Common
			13	8/4	No. 1 Common
			11	8/4	No. 2 Common
PLAIN SAP GUM			QUARTERED WHITE OAK		
SM	5/8	FAS	60M	4/4	FAS
40	5/8	No. 1 Common	70	4/4	No. 1 Common
10	5/8	No. 2 Common	31	4/4	No. 2 Common
6	3/4	No. 2 Common	20	5/4	FAS
15	4/4	FAS	60	5/4	No. 1 Common
100	4/4	No. 1 Common	6	5/4	No. 2 Common
100	4/4	No. 2 Common	3	6/4	FAS
15	4/4	WBBS	3	6/4	No. 1 Common
7	4/4	NBBS	3	8/4	FAS
10	4/4	WPAN	18	8/4	No. 1 Common
4	5/4	FAS	9	8/4	No. 2 Common
25	5/4	No. 1 Com.	CLEAR FACE STRIPS		
15	5/4	No. 2 Com.	(Sap No Defect)		
10	6/4	FAS	15M	4/4	2-2 1/2
10	6/4	No. 1 Common	6	1/4	3-3
30	6/4	No. 2 Common	7	4/4	4-4 1/2
3	8/4	FAS	10	4/4	5-5 1/2
7	8/4	No. 1 Common	23	4/4	2-3 1/2 No. 1 Com.
70	8/4	No. 2 Common	SOUND WORMY OAK		
10	10/4	No. 2 Common	30M	1/4	
15	12/4	No. 2 Common	30	8/4	
			15	5/4	

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3/8 inch	5000						1000		
1/2 inch	11500	53900		4000		2500	42100	54700	
5/8 inch	43200	33800		3700		4000	56400	25800	
3/4 inch	78600	24200		2600		5100	34800	33000	
4/4 inch	72100	45500	2800	39200	800	68800	164200	403600	6500
5/4 inch	44600	15200	1000	6500	500	21900	55300	46900	1000
6/4 inch	40100	6300	800	2500	200	4200	28900	94300	2000
8/4 inch	60500	15600	900	5500	100	10500	23800	45400	1500
10/4 inch	9300			1500	1000	8300	106500	13100	
12/4 inch	6100			400	100	1000	22000	6600	
16/4 inch	3000			300	100	1300	3300	3100	

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If You Can't Get Men Get Machines

The above terse expression aptly applies to present-day conditions. One cannot help but see that it is both a timely and pertinent suggestion. The cry to-day is for greater and still greater production—not only to satisfy the business that may be offering, but as a patriotic duty to enable Canada to pass safely through the strenuous times that loom up ahead. In many lines of the woodworking industry the total production of the different plants is sold for months ahead. Travellers are being called in from the road and orders are being turned down almost daily. All this at a time when the demand for our products bids fair to increase.

If you can't get men get machines. The majority of our manufacturers are faced with a shortage of help, more particularly skilled help—the indispensable kind. There is scarcely a wood-working plant in Canada that could not find places for a few more competent employees, many are running below capacity for the lack of them. Does not modern equipment offer a way out?

Suggest to the average manufacturer that he can increase his output by installing up-to-date equipment and what does he reply? In all likelihood he says that he cannot secure sufficient men to keep the machines he has running, therefore it would be folly for him to add others. He overlooks, at least, this one fact, that most of the manufacturers of woodworking equipment have been devoting considerable attention to the turning out of efficient production machines, machines that will do more work with fewer hands, that will take the place of a number of older machines and thus release skilled mechanics for other operations.

An instance of this kind was mentioned in the

description of a plant that recently appeared in this journal. A straight edging and jointing saw had been installed and it was found that it actually did more work than was formerly turned out on two saws and, in addition, owing to the accuracy of the work it effected a saving in other directions. This merely illustrates what may be accomplished with new equipment.

The remark is often made that machinery prices are high, too high to install profitably at present. Granted they have increased, what line hasn't? In all probability they will go higher. That in itself is an argument for buying at once. The manufacturers of wood products are securing good prices, their profits are greater than they have been for a long while. It was not so long ago that the announcement was made that the profits of the furniture manufacturer ran all the way from three per cent. down, mostly down. These conditions have changed. The manufacturer of to-day can better afford to pay the present prices for machinery, high as they may seem, than he could pay the lower prices of a few years ago when his profits were smaller. This does not take into consideration the increase in production, at reduced manufacturing costs, that would undoubtedly follow the installation of new equipment.

An illustration of this side of it occurred in an incident that actually happened not long ago. A farmer had received a quotation on a sleigh and replied that the price was too high. He had bought the same sleigh for considerably less money some few years ago. The sleigh man happened to have all his old papers and looked up the transaction, finding it as stated, except that payment had been made with wheat. He wrote back, saying that the sleigh had been paid for in wheat and if the farmer would send the same quantity of wheat he would ship the sleigh and throw in a parlor suite and a kitchen stove.

Go over your plant and see if production cannot be speeded up and labor conserved through the installation of modern equipment. Then reason it out for yourself and see if such an installation would not be one of the best investments that could possibly be made at the present time.

How Manufacturing Costs Have Increased

Handling costs in many woodworking establishments are frequently too high by reason of poor planning in the expansion of the plant by the addition of incongruous wings and sheds to a nucleus which the business has outgrown, necessitating shafting mounted at various angles to accommodate machines set wherever floor room is found. The lumber travels a tortuous route to receive the various operations of planing, mortising, etc., sometimes doubling back on its course, until handling costs more than machine processes and much power is wasted turning unnecessary shafting, etc.

The Hardwood Floor Increasing in Popularity

Instructions For Laying and Finishing Hardwood Stock—Features That Require Particular Attention—Instances Where Trouble Has Occurred

By W. H. Shaw

There is one feature in connection with the lumber and building industries that has made notable progress in the past few years, and that is the increasing popularity of hardwood flooring.

The real importance of this industry can scarcely be estimated by many, because it has moved along with such smoothness that only a limited few have really noted the rapid growth that has been made, and the important part that it is now playing in the construction world. In the construction of our homes and public buildings it has been a factor that has made itself felt, and it has leaped from a very limited industry to one of vast proportions. In short, it has at this time a field peculiarly its own.

Vitruvius was an architect of Rome a few years before the beginning of the Christian era. He published a book about B. C. 25, which bears his name. It is considered the oldest book on the Architecture of Antiquity that is known. In this book there is a mention of sawed lumber, and it is likely that planks or boards were sawed, perhaps with hand saws, similar to the pit saws of our grandfathers. He writes that oak boards were used for floors, and recommends that each board be nailed with two iron nails to every joist. This sounds very much like our own modern specification, inasmuch as there is a special hardwood flooring at the present time made with the holes bored on the tongue side to start the nailing.

Oak Very Popular for Flooring

Oak has always been taken as an example of strength and endurance from the very beginning of civilization. The oldest hewn wood in existence to-day is from the oak. No other kind of wood would have stood the supreme test of time. It is not alone the age that oak attains that always made it renowned, but its lasting qualities and strength when put into use for any purpose. It is considered by authorities on wood and interior decorations, as the best for all flooring purposes and combines beauty, distinction and durability.

The kinds of lumber used in this line of work to-day comprises the following: white and red oak, white maple, walnut, cherry, mahogany, birch and beech. Perhaps the most generally used of these woods is oak, plain and quarter sawed, though some other kinds of lumber have become popular where oak is rather costly. This applies in a particular way to beech, birch and maple, as most of the other woods mentioned are used for borders and do not enter into the main part, or field work of the floor.

So many things have to be taken into consideration in laying and finishing hardwood flooring to obtain the best results that I deem it expedient to treat the subject in detail, so as to enable all users to get satisfactory floors.

Levelling for Sub-floor

Before laying the sub-floor the joists should be leveled, as it is essential that the surface on which hardwood flooring is to be laid is level and smooth. If the floor is not level the nails will work loose in the low spots, making the surface uneven and permitting

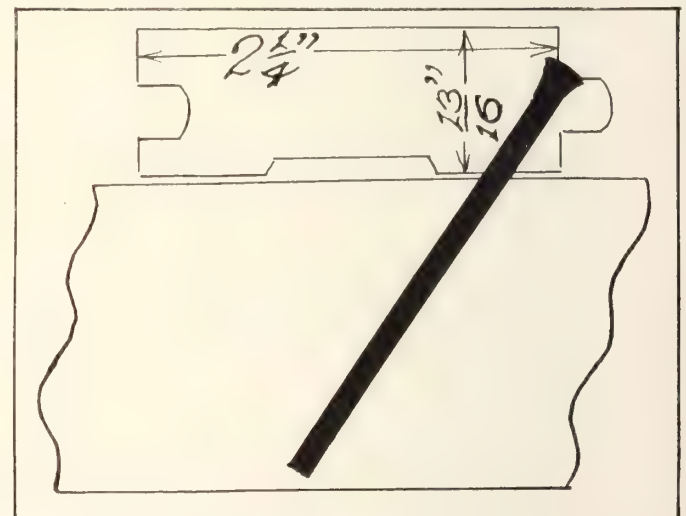
the flooring to give when walked upon, causing it to creak. The creaking is invariably blamed, unjustly, to loose matching. The same applies when flooring is laid over old pine floors, as the surface must be level to get results.

The sub-floor should be of serviceable wood, not less than seven-eighths inch thick, dressed one side to an even thickness, (four or six inch tongue and grooved pine preferable) and laid diagonally or straight across the joists, which ever is more practical in the class of building. A space that will be covered by the base and quarter round, should be left all around the room. The sub-floor should be nailed securely to the joists, but not driven too tightly together, so as to permit it to swell without bulging. It should be swept clean and allowed to dry thoroughly.

It is advisable to lay a good water-proof paper on the sub-floor. If necessary to deaden the sound, especially on upper stories, use a good deadening felt. If furring strips are used on top of the sub-floor they should be nailed securely to the joists and levelled.

Dryness of Stock Very Important

Great care should be exercised in seeing that the building in which hardwood is to be laid is thoroughly dried out before the flooring is put into it, and as



Correct angle for driving nails

even a temperature as possible kept during the process of laying. Hardwood flooring is thoroughly kiln dried and if exposed to moisture the tongue and groove will swell up, making it difficult to get together, and it will shrink after being laid, leaving unsightly cracks.

In starting to lay the hardwood flooring leave a space between the first strip and the studding or wall, that can be covered with the base and quarter round. This space should be left at the ends and opposite sides also, so that in case the flooring swells it will have room to spread without crowding the studding or buckling and spoiling the surface. Care should be taken to see that the first strip is laid

straight across the room and that each succeeding one is laid in the same manner. If the flooring is not laid straight it will throw the end matching, which is at right angles, off, leaving an opening between the ends.

To make sure that it is straight, after laying three or four courses, take a piece of 2 x 4, place one edge against the tongue and hit the opposite edge with a sledge, which will force each strip to shoulder up tight against the preceding one, ensuring an absolutely tight joint and perfect alignment. Don't force it so tight as to cause it to buckle.

The nailing is very important and should be given special attention. The thirteen-sixteenths in flooring should be nailed every sixteen inches with an eight-penny cut flooring nail, and the three-eighths inch thick should be nailed every seven or eight inches with a three-penny finish nail. Before starting the nail see that the strip is shouldered up against the preceding one. The nails should be driven on an angle of fifty-five degrees.

Correct Angle for Nailing

The first illustration shows an eight-penny cut flooring brad that has been driven at the correct angle. The nail is driven full length and then set. The other illustration shows a three-penny nail, such as used with 3/8-in. flooring. If the nail is driven too straight it will split the tongue and will not draw the flooring up, or if driven too slanting it will cause the flooring to buckle. After the nail has been driven almost its entire length, give it a final blow with the hammer to set it and draw the flooring tight together. Don't keep tapping it with the hammer after it is driven up, as you will work the nail loose again. In setting the nail, be careful not to bruise the face of the flooring, as it will leave an opening between the strips and mar the appearance of the surface.

The appearance of the floor can be improved very materially if a little care is exercised in not putting together strips that show too great a contrast in color.

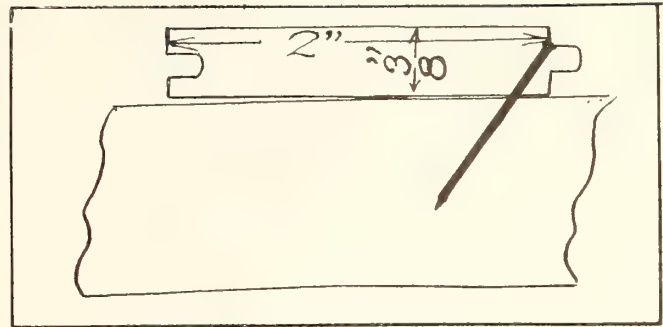
After the oak floor is laid and thoroughly swept it is advisable to scrape it in order to secure the best results. This scraping process can be done with the ordinary scrapers, such as used by cabinet makers, or by one of the many types of power or hand-scraping machines that are generally used by contractors and carpenters. Always scrape lengthwise of the wood and not across the grain. A floor properly scraped looks very smooth, but still it should be thoroughly gone over with No. 1½ sandpaper to obtain the best results in finishing. After this the floor should be swept clean and the dust removed with a soft cloth. The floor is now ready for the finish.

Finishing the Different Woods

Maple, beech and birch floors can be left just as they are after being scraped and sandpapered, but would recommend a coat of good linseed oil thinned with turpentine or benzine, or two coats of good floor varnish.

The finishing of an oak floor is a very important feature upon which authorities fail to agree. The question resolves itself into a matter of cost and the color or brilliancy of finish desired. Personal taste, artistic or decorative effects, are the guide for the floor finish:

The clear grade of oak flooring should have a natural oak filler—color of oak; the select and sap clear grades, a light golden oak filler should be used. After the floor is filled it should be gone over with a little burnt umber, mixed with turpentine, to darken



Proper nailing angle for train flooring

light streaks. This will make the select and sap clear grades look like the clear grade except that it will be slightly darker in color. In filling the No. 1 common grade a dark golden oak filler should be employed and the light streaks should be darkened in the same manner as the select and sap clear grades. If a little care is used in laying this grade splendid results can be obtained.

Treat the floor with a paste filler of desired tone to fill up the pores and crevices. To thin the filler for application one has a choice of using turpentine, benzine, wood alcohol or gasoline to get the right consistency. When the gloss has left the filler, rub off with excelsior or cloth, rubbing across the grain of the wood. The filler keeps out dirt and forms a good foundation, which is the key-note of successful treatment of floors.

Varnishing or Waxing

If a varnish finish is desired, apply two or more coats of good floor varnish, allowing each to dry thoroughly before applying the next. Should the gloss of a varnish be undesirable rub lightly with a good rubbing oil and pumice stone along with a piece of burlap. Then wipe perfectly dry and the gloss will disappear, leaving a dull finish, which is desired by many. Some authorities recommend a coat of good floor wax on top of the varnish, claiming that the wax protects the varnish from being scratched, and that it can be replaced much easier than varnish.

When a wax finish is desired, apply two light coats of white floor shellac, allowing the first to stand a day before applying the second. When this is dry use a No. 0 sandpaper lightly on the surface, removing any specks or lines that may appear. Then apply the wax, using a weighted brush made expressly for this purpose, brushing first across the grain of the wood and then lengthwise, and repeat until the brush slips easily over the floor. For the finishing touch, place a soft carpet under the brush, and continue rubbing until the desired polish is obtained. No less than two coats of wax should be applied and the best results are obtained by applying three or four coats. Each coat should be rubbed down before applying the next.

The amount of attention required to keep a hardwood floor in shape depends wholly upon the use to which it is subjected. All floors should be gone over from time to time and touched up. In the regular course of housecleaning the housekeeper should remove the dust by pinning a damp, soft cloth over an ordinary broom so that the dust will adhere to it, but be sure to wipe dry with a cloth immediately afterwards. In case the damp cloth does not remove all the dirt, use some luke-warm water and soap, being particular to cleanse this off as quickly as possible and

wipe dry. For removing stains use a cloth saturated with turpentine or beizine. If the finish is dull after giving it a thorough cleansing as recommended above, obtain, at a small cost, some floor reviver, saturate a cloth with it, wring it out half dry, and rub the finish until the lustre returns.

To find the amount of flooring required to cover 100 feet of surface, add width of face

	1 3/16 Flooring	3/8 in. Flooring
For 1 1/2 in. face flooring	50%	33 1/3%
For 1 3/4 in. face flooring	43 3/4%	29%
For 2 in. face flooring	37 1/2%	25%
For 2 1/4 in. face flooring	33 1/3%	
For 2 1/2 in. face flooring	30%	
For 2 3/4 in. face flooring	27 1/2%	
For 3 in. face flooring	25%	

How Troubles May Be Eliminated

Hardwood floor layers may be divided into two classes—the good and the bad. Owners, architects, and contractors nowadays know the value of first-class work when it pertains to hardwood flooring. Even after the floor is finished, the appearance, at some time sooner or later, if improperly laid, will develop the result of bad workmanship.

The laying of hardwood floors (kiln dried) requires a great deal more thought and mechanical skill than a great many imagine. When the carpenter has completed a nice, pleasing job of floors and shortly afterwards he is asked to come back, and is shown where they have raised up, and he is told that he did not put in good stuff, his work was faulty, and a hundred and one other things that he is not to blame for, it is most certainly very annoying.

A few years ago 3,450 feet of oak flooring was laid by an incompetent floor layer, parallel with the sub-floor. The sub-floor, in the course of ten days, started to contract, with the result that it made crevices in the floor every six inches, which was the exact width of the sub-floor. The owner made the complaint to the dealer and I was called upon to look into the case. A glance at the floor immediately showed the flooring was laid parallel to the sub-floor. The floor layer was called upon to explain why he laid the oak flooring over the sub-floor in this fashion. He had no good excuse to offer other than he thought it was the proper way. It brought out the fact that he was a novice in floor laying. Every bit of this oak flooring had to be taken up and replaced by new oak flooring, and, of course, this time it was laid properly at right angles to the sub-floor.

A short time ago 2,000 feet of oak flooring was laid in a residence immediately on delivery. This stock had not been stored properly by the dealer and had absorbed considerable moisture, with the result that many pieces had expanded as much as 1/16 inch over their original size. As soon as the house was heated unsightly crevices appeared all over the floors. It was necessary to tear this floor out and replace it with a new one, at a big expense. Both the dealer and foorer tried to lay the blame on the manufacturer of the stock, but it was shown that the material had been dry when put in storage and that the shed was not a fit place for the storing of dry material, especially oak. The cost of replacing was borne by the dealer and layer.

Floors Often Abused When Cleaning

A few years ago a nine-inch brick wall was bulged out to the extent of three inches and after investiga-

tion it was found it was done by the flooring, which was oak, being badly abused by too much water being used and left on it in scrubbing the floor, which caused the swelling. Usually in a case of this kind, the floor will bulge up in the middle of the room, but it was found in this particular case that nails were generously used through to a heavy sub-floor.

Considerable 3/8 inch thick veneer flooring is being used for floors in old buildings. The writer has found by experience that the narrower the flooring the less liable to give trouble, for the reason that there is very little nailing body to this 3/8 inch stuff, and you have to use a 4d or 1 1/2 in. finish nail, and with the narrow stuff you get a better nailing surface.

More attention should be given the subject by the average carpenter, because the increasing popularity of hardwood floors is gaining so rapidly that it would be a wise move for every carpenter to have at least a fair knowledge of the subject, so that he may be in a position to contract for this kind of work and do it with intelligence and satisfaction to his customers.

Workmen's Homes Built by Canadian Firm

The subject of workmen's housing is now receiving wide attention both in Europe and on the North American continent. While the question has been somewhat neglected until recently by the province of Quebec in general, several efforts have been made privately by industrial concerns to solve the problem and make the conditions of their workmen an asset to the company. The accompanying illustrations from the work of Mr. J. Cecil McDougall, A.R.I.B.A., architect, Montreal, show what has been done for the St. Maurice Paper Co., Ltd., at Cap de la Madeleine, P.Q.

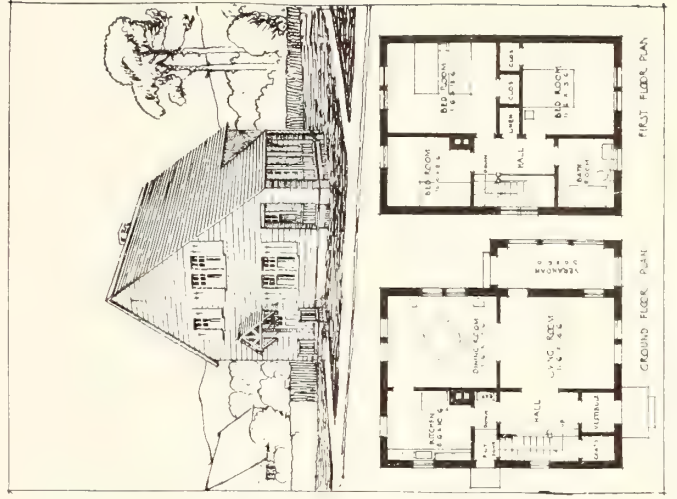
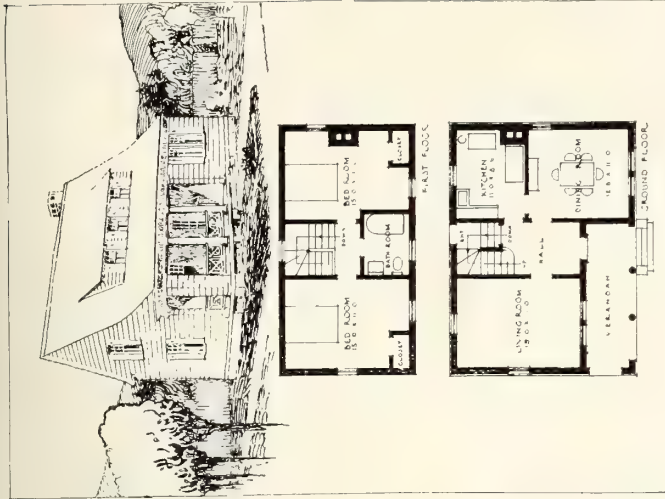
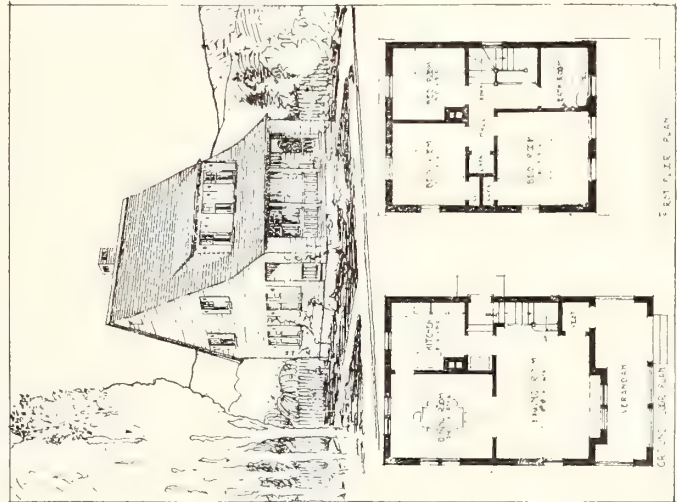
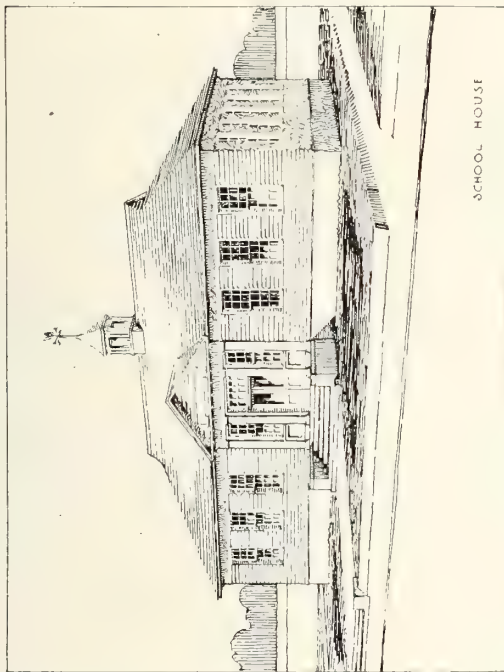
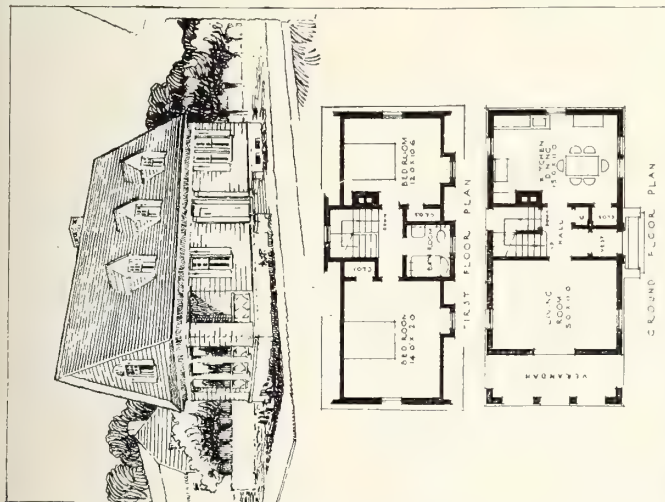
In this case the object in view was to provide comfortable homes for the employees, built at a cost which would enable their being rented at a figure within the means of the workmen and at the same time give the company some return on their expenditure. This is the basis, or should be, of all "Industrial Housing."

The local labor and materials must always be factors in any industrial housing scheme, and for the one under consideration no brick was available and lumber was plentiful, so that the construction is wood frame, clap board exterior, and plastered on the interior, the foundations being concrete. All the houses have basements, bath rooms, electric light, and are heated by a hot water system. There are four standard units being used: Type A with four rooms, type B with five rooms, and type C and D with six rooms.

The first two types have a general similarity in the disposition of the rooms, but while the former is designed to be built with the gallery end facing the main road, the other is placed with the entrance facing the road, enabling these two types to be used in combination, forming a group around a court, along the lines of the best developments. In the case of type A, the kitchen and dining room are combined to form a general living room, which leaves the other floor room to be used as a parlor, as is often desired. In type B the dining room and kitchen are separate and the vestibule is eliminated on account of the entrance being protected by a verandah.

The other types, C and D, show two different solutions of the six-roomed house. In type C additional space is obtained in the living room by omitting the

Left: Four-roomed house (Type A). Centre: School House. Right: Five-roomed house (Type B).



Left: Six-roomed house (Type C). Centre: Ground floor plan of School House. Right: Six-roomed house (Type D). Plans of workmen's homes developed by the St. Maurice Paper Co. for its employees.—Mr. J. Cecil McDougall, architect.

hall and placing the stairs next to the entrance. Type D is a little more pretentious than the others, having all the customary requirements within a reasonable area.

The exteriors, always a difficulty in an inexpensive house, have been treated in a simple manner,

with due respect for economy and an avoidance of striving after effects.

The school house illustrated is constructed in the same manner as the houses, planned along recognized lines, with all the conveniences required and heated by a hot water furnace in the basement.

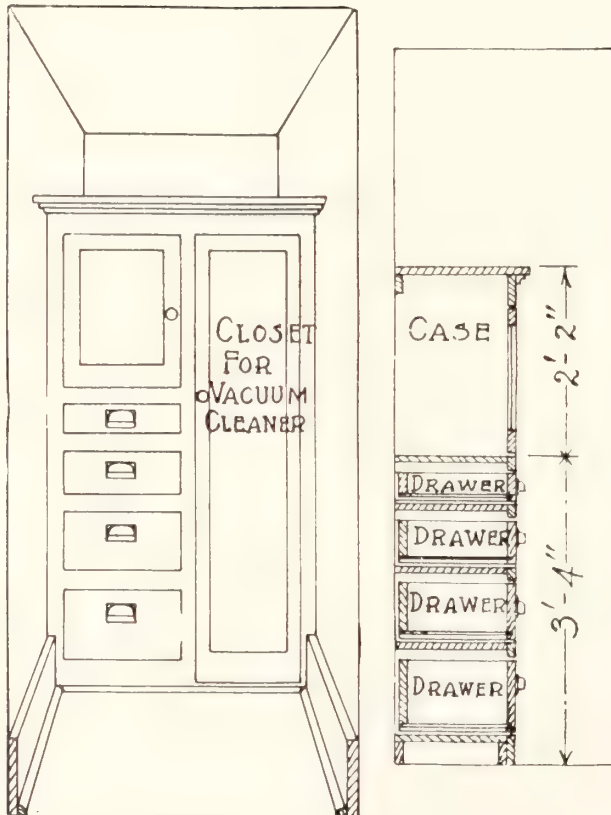
Every Nook in the Home Made Useful

Cases Built Into the Closets Increase Storage Room, Are More Convenient, and Save Space in Building New Houses

In the many thousands of homes to be erected this year every effort will be made to conserve space. All the nooks and corners will be utilized to give the owner the greatest satisfaction for his money. This is necessary because of the cost of building, but by using his ingenuity the contractor can give his client almost as much for the same amount of money as he could several years ago, when materials were cheap and a few feet more or less did not count so greatly as it does now.

In the homes this year very little space will be devoted to storage room. The home owner will look upon a storage room as a waste—not worth its cost. But by making each closet so that the greatest amount of clothing and other articles can be stored in it, there will be plenty of storage space. Every housekeeper knows how much of the room in the old-fashioned plain closet is not used; or, if it is used, is merely the

varying sizes. At the top is a case, two feet, two inches high. At the right hand side of this case is a case five feet, six inches high in which can be stored the vacuum cleaner, the dust mop and the broom. Every housekeeper will at once realize how handy this closet



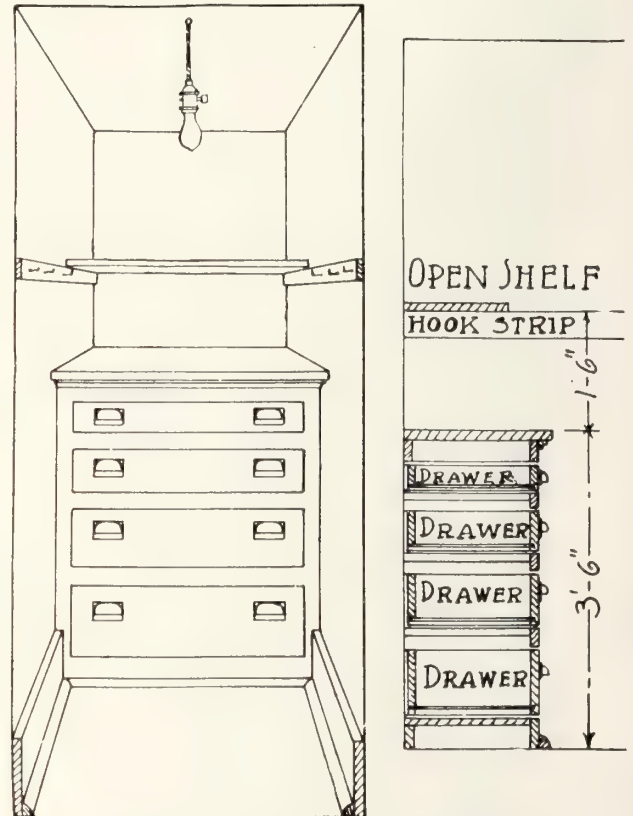
Handy closet for dining room or kitchen

dumping ground for odds and ends. By providing a place to store various articles, this waste will be eliminated.

Three Suggestions for Closet Cases

Accompanying this article are three suggestions for cases the contractor can build into the closets. In these cases can be stored in the most satisfactory way all of the wearing apparel, the household utensils and the linens, towels, blankets and extra bedding.

Figure No. 1 is a suggestion for a closet off the dining room, or the kitchen. At the bottom, extending upward three feet, four inches are four drawers of



Bedroom closet with waste space eliminated

will be. Here is storage space for the linens and the utensils that are in every-day use. And the space it occupies at the back of the closet will be orderly.

Fig. No. 2 is a design for a bedroom closet. There are three cases, one at the bottom and two at the top with two drawers in between. The bottom case is for shoes. It will accommodate a number of pairs, being divided in the centre with a shelf. The drawers will hold a variety of light garments. The lower of the two top cases is designed for hats, while the top case can be used to store heavy bed clothing, such as comforters and blankets.

Figure No. 3 shows how the clothes closet may be fitted so as to provide more storage room. Here are four drawers of various depths, on top of which boxes may be piled. The shelf above is a handy storage place, while along the walls are hooks for hanging the clothes that are in daily use.

No Special Hardware or Lumber Required

All of these cases are easily constructed and may be built at the shop and installed when the house is about completed. They require only such hardware as is not expensive, the balance of the cases being made of lumber of standard dimensions.

It is just such small details as this that appeal to

the women when they are studying home designs. The exterior and the room arrangement and the sizes of the rooms will be carefully scanned by the men, but to the housekeeper the conveniences to make her work easy and satisfactory will be what counts.—“American Builder.”

“Dont’s” For Machine Workers

Don’t wear loose-fitting garments, and leave a scarf-end hanging.

Don’t wear shirt sleeves down over your hands; roll them up.

Don’t use waste or rags in cleaning running machinery; it may be caught up by some projection, and cause you some injury.

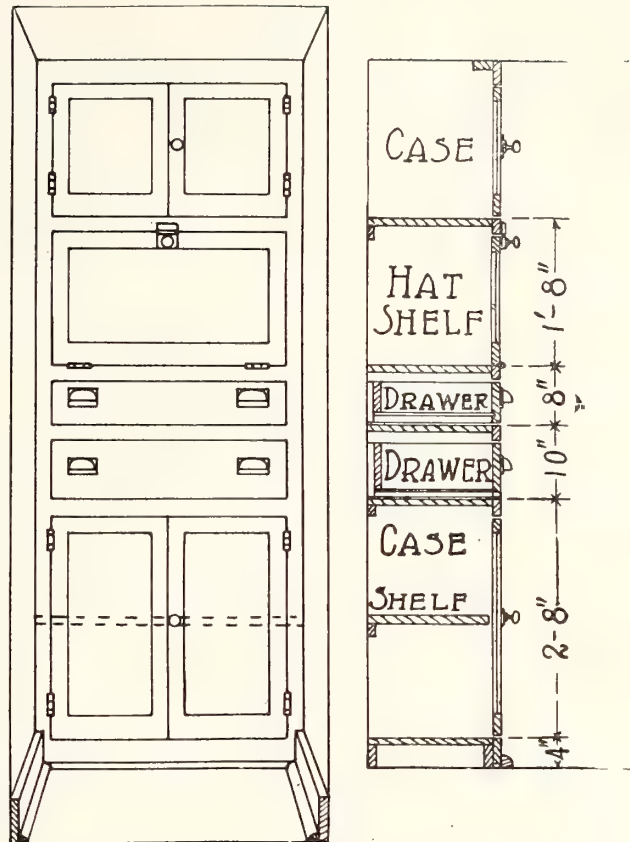
Don’t gaze idly about the shop when operating a machine; fix attention closely on your work.

Don’t fail to replace gear or cutter-guards after removing them for setting or adjustment.

Don’t pass work as “good enough” when it can be improved; no work is worth doing badly.

Don’t tell your boss that you know more than him, even if you know you do; it’s a bad policy.

Don’t deny that you have made a “bloomer” when you know that you have; and don’t bury it out of sight in the sawdust heap, or the scrap wood pile. Some day they’ll be found—and their owner.



A compact and handy arrangement

Manufacturers on Question of Skilled Labor

Can Apprentice System be Revived?—Increase of Wages Can Only Follow Increased Price of Product—Technical Schools of Value

An adequate supply of skilled labor for the present and for the future is a question that is today engaging the earnest attention of woodworkers and other manufacturers throughout the country. The problem is probably more acute in the woodworking industry than in any other line of endeavor.

The seriousness of the inadequacy of the future supply is enhanced by the fact that the training of apprentices is practically a thing of the past. Today the boys and young men are seeking employment that offers greater remuneration than is to be found in our woodworking factories and even those who evince a preference for woodworking realize that after learning the trade the probabilities are that the wages paid will be considerably lower than they could earn had they followed some other calling.

The following opinions and suggestions were secured from prominent manufacturers in different localities and are extremely interesting, representing as they do the views of employers of skilled labor.

Wages of Apprentice Inadequate

A woodworker in Central Ontario intimates that in his estimation the situation is caused by the first class employee being what may be termed a specialty man, one who is thoroughly acquainted with one machine or one operation only and depending on the endeavors of other specialty men for the remainder of the work required to turn out the finished article. In the past when our journeymen had finished a 3 or 4 year apprenticeship he could take any order or bill in de-

tail and go from machine to machine or bench to bench and turn out a completed article ready for the finishing room. The high cost of living and the present day conditions will not permit of any young man spending 3 or 4 years of the best part of his life for four or five dollars per week, except in extraordinary instances. Technical schools will teach a pupil theory and acquaint him with one make of machinery and a system insisted upon by the principal of the school, but he will not possess the experience so essential in a desirable employee. Did you ever hear of a farmer of only ordinary means ever making a success of farming by following the methods and systems taught at an agricultural college? Did you ever hear of an agricultural college that was able to pay its own way even under the extraordinary conditions in which they exist? Would you if a manufacturer follow the expensive methods and systems of operation taught your future employees by the instructors of a technical school? I do not think so. Our experience has been that the product of a school is far more extravagant and expensive than the employee you educate yourself. This latter we believe to be the only sane solution of the problem.

A furniture manufacturer in Kitchener believes that the present shortage of skilled woodworkers is owing to the low wages being paid in woodworking plants causing some skilled woodworkers to leave their trades and enter into other lines, especially munition plants, etc., that have opened up during the war period and

who paid exceptionally high wages. Then again during the past five or six years there have been no apprentices in the woodworking trades. This has been especially noticeable in this locality where the boys and young men are able to earn from \$2.00 to \$3.00 per day in the rubber and other factories. It will mean that woodworking plants will be forced to pay from \$2.00 to \$3.00 per day for apprentices when learning this trade.

Wages in woodworking plants have gone up considerably during the past 6 months and the men in these plants are now earning better wages than formerly. This is attributable to the manufacturer being able to obtain better prices for his output thus enabling him to pay higher wages to his employees. The wages are still too low in comparison with other plants, the average weekly wage paid to woodworkers is not in excess at \$20.00 per week. In our own plant the average weekly wage paid is \$19.34.

Something will have to be done either through technical courses or co-operation in the establishment of training schools or classes by manufacturers. It will only be through a system of this kind that manufacturers will be able to secure sufficient help.

Encourage Young Men to Take up Woodworking

A Toronto employer ventures the opinion that this shortage of skilled woodworkers is caused by too few young men serving their apprenticeship. To quote him further he says: "As far as I can learn it is difficult to get apprentices to learn a trade. They refuse to work at the wages that are paid apprentices. The consequence is that there is a surplus of general help, or half baked mechanics, and a shortage of skilled mechanics. This, perhaps, is more acute in the woodworking industry than in other industries. For instance, furniture manufacturers have to sell their goods all over Canada, in addition a few companies are trying to do an export business and as there is keen competition in furniture the wages perhaps are kept at a lower level than they are in many other trades. For carpenters, steam fitters, plumbers, electricians, railway employees and several other branches, the standard of wages is higher than in the woodworking industry. Encouragement should be given to young men to learn the business, and as far as possible keep the wages equal to other industries that are not localized.

"It is desirable for the general benefit of the trade, as well as for our country, that the furniture makers get together and each make a special line for export, but not conflict with each other; and appoint one or two general representatives for the British and foreign trade. The time may be near at hand when export business will be necessary to keep the plants running to the full capacity. It will be wise to make preparations now."

The problem of an eastern manufacturer is to secure an adequate supply of competent bench hands. He adds: "We think one way of overcoming this shortage is for the immigration department to make inquiries and secure competent men who are willing to come to this country. If the department would find out from the manufacturers just what men they want, it should be able to get these men from Scotland and England and place them right where needed. Another way to increase the supply is by means of vocational training schools located where men are required, in places other than cities. At the present time if a young

man wants to take a course of this kind he has to go to the city to get it and after getting his training does not want to come back. If we could get young men trained in towns before leaving home they would be under less expense and be more likely to take such a course and there might be more chance of their staying at home afterwards.

A discouraging feature of the skilled labor situation, according to a large employer, is that men in the woodworking business that have had the ability to climb to the top, either to the position of superintendent or manager are not bringing their boys into the woodworking business for the simple reason that they have followed the line for years knowing that they never received the wages that the iron-workers do. These conditions necessarily appear to set a premium on unionism or labor combine, as unions with all their faults apparently should be credited with earning for the ironworking trade favorable conditions of work compared with the woodworkers.

A Western Ontario producer blames lack of apprentices for present outlook. He says: "We think to go back to the root of the matter there are not as many apprentices starting in as there formerly were. Not long ago apprentices would go in for a three-year course; that is practically done away with now. The main reason was that after putting in their time at low wages they were not paid enough later on to warrant the time lost in learning the trade. And then too we believe the woodworkers have been paid on a lower scale than almost any other line of skilled work."

If the woodworking industry is to grow and expand and hold its place among the big industries of Canada, this situation must be overcome. When maximum production cannot be maintained in existing plants the equipping of new factories or the extending of present operations would seem to be fraught with danger. If you can see how the existing situation can be bettered won't you send your suggestions to the "Canadian Woodworker."

Stratford Manufacturers Tour the West

A number of Stratford furniture manufacturers have recently returned from a trip through the Canadian West, going as far as Victoria, B. C. They visited most of the main centres, calling on the furniture trade, en route.

The trip furnished an opportunity for meeting the trade and seeing under just what conditions they are working, and Stratford's position among the furniture men of the west is more firmly established as a result of the trip.

They report that business is good in the West. In a few sections the crops are not up to much, but the farmers are not downhearted. The dealers are just hungry for goods, especially on the coast. They were all of the opinion that the business was quiet in B. C., but were gratified to find that such was not the case. The B. C. lumbering industry is going ahead at a great rate. The trip was a pronounced success.

The party comprised H. W. Strudley, of the Imperial Rattan Co., D. M. Wright, of the Geo. McLagan Furniture Co., W. J. Anderson, of the Stratford Chair Co., F. W. Trebell, of the Kindel Bed Co., Chas. A. Moore, of the Stratford Manufacturing Co., and Mr. F. M. Gifford of the Farquharson-Gifford Co.

Experiences With Open Glue Joints

Several Theories Advanced—Too Much or Too Little Moisture Often Blamed—
Dampness Absorbed During Process of Manufacture

By T. J. H.

There is nothing more provokingly disappointing in a furniture factory than the opening up of glue joints and it is generally just as the article seems to be completed in the cabinet-room, or is partly finished, that the trouble shows up.

After more than twenty-five years experience in furniture work, and looking at the trouble from different view points and noting the care that has been displayed in making tests of one kind and another to find out, if possible, what is the cause of the joints giving away, I have never yet known any person to declare that they were "dead sure" that they knew just what caused the trouble. In most cases, at first, the lumber is blamed and we say, it was not properly dried, there was too much moisture left in it, and in a few cases I have heard it said, that the lumber was too dry, not enough moisture in the stock when it was glued up.

Modern Methods Have Not Availed

The percentage of open joints was not any greater twenty-five years ago than it is now, and our method of testing lumber coming from the dry kiln in those days was not anything like as systematic and accurate as it is today. In my early days at the furniture trade, I was taught to judge whether lumber was sufficiently dried by the "smell." That is, we would take a board out from the dry kiln truck, about half way between top and bottom, and cut a piece off three or four feet long and immediately place it to the nose to get the odour. I think this method is still adhered to in some places. Another way we had was by the "sound." We would take a board, and tap it with the knuckles, or some light piece of wood, and if it gave out a certain peculiar ring which we had learned to recognize, it was put down as dry. From that we got to the "shrinkage" test, which we still use, either by measuring or weighing and it is the best and most scientific way of ascertaining the amount of moisture held in lumber that has yet been discovered.

Today in spite of drying our stock to the exact percentage of moisture we still have open joints. How is it? Does the trouble arise from imperfectly dried stock? I have never yet been persuaded this is the cause, or only rarely so, there are other causes, and they seem very difficult to locate.

Glue Sometimes at Fault

I have a vivid recollection of a concern, some years ago, who were manufacturing goods for the English market and had just completed an order for a large number of quartered cut oak library tables (one hundred I think). They were to be shipped flat and in the white. Just as they were beginning to box them up, it was discovered that some of the joints were opening just a little at the ends.

Now this was considered serious, and it was deemed necessary to put the whole lot of tops in a moderately warm room, and strip them carefully to see what would happen. In about two weeks they were taken out and every solitary joint could be easily broken with a light tap against the bench. No joint had to be

ripped open with a saw. Well, it was decided by those who had the matter under consideration, that in this case the glue was at fault, "too weak" or "thin" it was said.

As the tops were serpentine in shape the difficulty was overcome by re-jointing by hand, and fortunately, for this work in the first instance they had been jointed with a flat joint, so there was very little taken off in making a new joint. In due time they were all fixed up and shipped and I never heard anything more about them.

Climate Conditions Vary

Some years ago a fellow workman in a certain factory went to British Columbia and while working in a furniture factory out there, cutting out stock, noticed in handling the lumber that it appeared to him not to be very dry. He spoke to the foreman about it. "Oh," the foreman replied, "that's all right. This is a damp country, you know." In speaking to me about it some time afterwards my friend said the stock was really not dry and apparently they were having no more trouble with bad joints than we were here, where we were exercising the greatest care to have our stock thoroughly dried. Perhaps I should have mentioned that out in B. C. it was principally ash, fir and other soft natured woods that they were using, while here our trouble seems to be with quartered oak, birch and occasionally some other kinds of wood.

Some years ago I bought a table and I don't think it was in the house a month before one of the joints opened up for about four inches at one end. When I first noticed it I fully expected that I would have to take it back to the factory and have it re-jointed, but I neglected doing so at the time, and as it did not seem to be getting any worse I let it go. I have just examined that table, and the joint is not any worse now than it was four years ago.

The Season Has Some Effect

I have also noticed that this open joint trouble seems to be worse in the summer, and fall of the year, when we would naturally expect it would be easier to keep the lumber in shape as regards being dry. My theory is that in the summer and fall when the windows and doors are opened to let in air, the air is very often heavily laden with moisture. This moisture is readily absorbed by the dry stock. It often happens that we find it handy to pile tops, gables and so forth, near a window where it is in a good position to catch any moisture that may be coming in. The moisture may not penetrate very far into the wood yet far enough to cause the glue to lose its "grip" just a little at the ends. I once examined a quantity of tops where the joints had given away at one end only. Why not at both ends? That would seem to bear me out in my theory that the end that caught the moisture was the only part where the glue lost its hold. A practical man once said to me that "a thoroughly dry board would absorb moisture like a sponge would water." We know that an article that is finished is more impervious

to weather conditions than an unfinished one and yet joints often open while in process of being finished. I think the trouble had started before reaching the finishing room but not enough to show up until the materials get into a room with a higher temperature.

A gentleman that I know, wrote to the manager of a certain factory asking his experience relative to this matter and all the consolation he was able to give was "if you are troubled with bad joints you have my sympathy." It appears there is no hard and fast rule

that will apply to all localities in drying lumber, to contain a certain percentage of moisture, that will give the best results all round. Different locations seem to require different degrees of moisture. It is a matter largely of experience, that each factory must work out for themselves, to get the best results possible, and having got to that point where the percentage of defective joints is low, hold on. I have not said anything about the spring joint question because today in most places it is considered impracticable.

Will Piece Work Lower Production Costs?

**Tend to Increase Efficiency of Men—Foremen to Set Rates of Pay—
Work Must be Kept to Standard**

By Superintendent

Piece work or day work is the source of a great deal of discussion and it is safe to say that no one can state positively which work should prevail on any job until a test has been made.

Conditions and prices have changed so radically in the last five or six years that the conditions which formerly governed labor will not apply now in any case. Skilled labor is in a position to demand almost any price to-day partly due to organization and partly to a condition that is very hard to understand. It was easy to understand during the last few years of the war why wages were so high when there was such an urgent, even feverish demand for everything needed to carry on the war. The shortage of skilled men in all branches gave the men the opportunity they were looking for, and in addition the work was nearly all for the government who always had been in the habit of paying larger wages than any private companies. The result was that men employed on government work got such inducements that small manufacturers were unable to compete in wages and so were unable to hold their help.

Now that all this is changed and thousands of men employed on government work are thrown once more upon the labor market while other thousands, who were at the front, are returning to search for employment, these high wages might reasonably be expected to drop, but they still continue to soar while thousands of men are looking for work. This is a condition that is very hard to understand and in addition to this the men who are employed by smaller concerns, who were unable to pay war time prices are dissatisfied and uneasy and they simply won't do the work they used to do, even at any price.

If they are getting a good price they feel that they are master of the situation and they just hang back and make the work cost so much that the employer has to resort to piece work if he is to make on his goods, it is then that the proper adjustment of piece work prices becomes a serious question. It does not do to guess at the price that should be paid for a certain work as it is sure to be much too high in some instances and too low in others neither can we set the price by cost sheets kept on previous work done by the day for that will prove to be nearly double, in some cases, what it should be. Another mistake often made is that of setting the man at the work and keeping his time on a certain number. This will not prove satisfactory as he will pretend to do his best while in reality he is purposely losing time at every move in order to get the price fixed high

enough to enable him to earn a large day's pay without doing much work. Besides, the first lot put through will in many cases take from 25 per cent. to 50 per cent. more time than the same work will take after he has been doing it a while. I have often seen them nearly double up on the output after getting the swing of the work while in many cases the day men will make it cost more and more the longer he works at it, owing to his not having an incentive to make him push ahead.

It is plain that wherever work is turned out in sufficiently large quantities piece work is the most satisfactory to both parties but great care must be taken to get the price right in the start, if it is set too high at the start there will be trouble when you try to cut it down and if it is too low they will slight the work and resort to all kinds of trickery to make a fair day's wage. I have found that the best way is for the foreman, if he is a practical man and can do the work quickly and well himself, to do a certain amount of the work and keep the time on it and if he finds he can do say 50 pieces in an hour by doing his best he must realize that a man cannot do that all day and keep his tools sharp and machine in adjustment so he will often be safe in making a reduction of 25 per cent. on that number of pieces and will still have a big output for the day. He must also take into consideration the fact that the man will increase his output 25 per cent. in a few days but this should go as an inducement to the man to do his best. Setting the price on a basis of 37½ per hour makes a fair day's pay when 50 per hour was the limit of output the price will be found to be about right and even if the man does make a larger thing on the work, the cost of the work will still be so much below what it would be if it were done by the day that it will be a good paying proposition. Once the pace is set the work must be watched to see that it is not slighted as a great many men will try to double their output by slighting the work even though they know they are doing their employer a damage that is actually criminal, for instance, in gluing up case goods, the glue will not be half applied where it cannot be seen, even though they know it will eventually come apart.

A desk manufacturer in Kitchener was given the opportunity of selling his entire output for the next five years to British buyers. While this proposal was not entertained, sample orders were placed and it is likely that the British market will buy all the goods that the Canadian industries can offer for the next few years.

Foster Merriam Appoint Canadian Representative

Major C. V. Grantham, M.C., has been appointed Canadian representative for Foster Merriam & Co., of Meridan, Conn., and will make his headquarters in Hamilton, Ont.

Major Grantham, while on service overseas, participated in most of the major battles in which the Canadian Corps were engaged, being wounded in front of Lens in 1917. He was awarded the Military Cross



Major C. V. Grantham, M.C., Hamilton

for gallantry at Passchendaele, where, in command of over forty machine guns, he showed great daring and skill in reconnoitering new positions and in advancing his guns to the same as the attack progressed. The Major has just returned from a two months' trip to the factory at Meridan and while there saw the Foster Merriam line of castors, cabinet hardware, automobile accessories, etc., being manufactured.

Work Twirled by Smooth Shafting

A bulletin recently issued by the Nation Safety Council, Chicago, dealing with the danger of the various machines has this to say about shafting:

Transmission shafting in motion is a very grave source of danger to the workmen who come in contact with it. Any unevenness whatever may suffice to catch and wind them around. The man is drawn in by the shafting as it revolves and is turned round with it. At other times he may be dashed violently to the floor and seriously injured. Only one chance of escape offers itself to him, viz.: That of having on old or worn-out garments which are easily torn away from him and would let him fall before death came. Workmen have been completely divested of their clothing by a revolving shaft. Even this single chance of escape is quite accidental, for the fall may cause the workman to be severely injured if not killed.

It is a mistake to suppose that shafting must necessarily have a projection, such as the end of a key or the head of a screw, before one can be caught by it. It is enough that the shaft should be a little greasy, as is often the case, and that any loose part of a garment, or simply a torn piece rub it against it and become wrap-

ped around it. There have been numerous examples of this.

Guards of netting or of other pattern can be easily provided to prevent workmen from coming in contact with revolving shafts. Many states have laws governing this matter.

What Would You Do to Hold Customers?

Some dealers figure that when they lose a customer and gain another to take his place, they have played even. That is a fallacious idea.

When a customer leaves you, he thinks he has a profit which would come to you from his business, but you also lose something which represents very much more to you in the success of your business, and that is "good-will"

When a customer leaves you, he believes he has a good reason for withdrawing his patronage. It may be and frequently is, a mighty poor one, but until you can disabuse his mind of the idea he is holding, he is going to "talk" and his talk is always against you. Whenever you or your business is mentioned, he is going to air his grievance. You are not on the ground to present your side of the case, and what is the result? The man throws stones at your good-will until it is as full of holes as is a clay highway after the rainy season.

French Reconstruction Work Progressing

Reconstruction work in France must necessarily be slow, at least for a while. It must be borne in mind that reconstruction cannot be planned, financed and pushed to a conclusion with undue haste. The work has progressed much more slowly than a good many business men had anticipated. It was found that in many lines in France, just as at home, the shelves, instead of being bare, were pretty well stocked by foresighted buyers, who had anticipated even more difficulty in getting goods in another year of war and had loaded up while they had a chance. In the face of this, many dealers have allowed their early optimism to swing into dark pessimism, but the latter is now no more warranted than the over-optimism of six months ago. France needs the market for its exports and France needs our goods, and trade relations between the two countries should be better, and not worse.

New Type of Door Invented

One of the exhibits at the Model House Exhibition now being held at London is a door of novel construction, which has been patented in Great Britain under the name of "The Receivador." The door is a double one and is constructed with compartments into which tradesmen may insert parcels without disturbing the occupant of the premises. Inside the house another door gives access to the compartments, and the mechanical feature of the contrivance is the alternating interlock, a clever device which makes it mechanically impossible for both the outer and the inner door to be open or unlocked at one and the same time.

When the tradesman, after inserting his package, closes the outer door of the compartment and turns the knob, this action automatically locks the outer door and unlocks the inner door. When the owner removes the package and closes the inner door, the latter in the same manner is locked and the outer unlocked. The doors and locks are being manufactured in Nottingham.

Many Fine Pianos Were on Display

Piano Manufacturers Realize Value of Annual Exhibits—Satin and the New Art Finish Both Popular—None But Staple Lines Shown

The visitors to the manufacturers building could not help but be impressed by the many fine showings of pianos and organs that lined both sides of this building. Even though they did not notice the instruments that lined the outside passageways the music that drifted out from the various booths would soon claim their attention. Many of the handsome exhibition instruments that are usually shown were missing, the instruments shown being practically staple lines. That the satin finish is growing in popularity is evidenced by the fact that the majority of pianos on display were in satin finish. Brief description of the various exhibits follows.

Martin-Orme Piano Co., Limited, Ottawa.—The Martin-Orme made-in-Ottawa pianos were out in full force. This firm had on display a number of player and upright pianos in all the popular designs and finishes. One of the newer cases that caught the eye was the "Vimy" model in a beautiful burl walnut, natural finish. Another new model was called the "St. Julien." In addition Louis XV. and Colonial designs were shown. The Martin-Orme line embodies many new features, among which are the continuous one piece bridge and duplex bearing bar. The violiform system of construction is used. These features add to the quality and prominence of the tone of the instruments and enable the Martin-Orme pianos to live up to the high reputation that it has achieved.

Bell Piano & Organ Co., Limited, Guelph, Ont.—The centre of attraction at the Bell booth was one of the first pianos ever turned out by this well known firm. This piano was made at Guelph in 1884 and in appearance and tone it belies its age and does not show any depreciation for its 35 years of service. The usual number of pianos and organs in various designs and finishes were on the floor. One of the newer instruments was a case built to cater to the British trade. Two of the features to help maintain the reputation of the Bell piano are the illimitable quick repeating action which give the quick responsive touch, formerly found only in grand pianos and the metal sustaining frame which replaced the wooden back and adds to the strength and tone of the instrument.

Heintzman & Co., Ltd., Toronto, Ont.—Ye Olde Firme of Heintzman & Co. were at the Exhibition with their usual showing of high grade instruments, a miniature grand in walnut, a beautiful instrument was the centre of attraction. Other designs shown included a semi-grand model and designs in ionic, duchess, classic, Louis XV., empire and a very attractive model in fumed oak, plain case known as the Tudor. Some of the features embodied in the Heintzman line are the Agraffe Bridge for up-right pianos, an improved piano action, a new knee bottom support and other items. Heintzman pianos hold an enviable position in the piano field and are known for their purity of tone.

The Willis Piano Co., Ltd., Montreal, Que.—A large number of lovers of fine music were attracted to the booth of this firm. The drawing card proved to be the celebrated Anpico reproducing piano, manufactured by the William Knabe & Co. This is one of the finest instruments manufactured on the continent and

is unexcelled for its wonderful tone and life like interpretations. Other instruments shown included the Willis and Chickering pianos in different designs and finishes, such as the Louis XV. and Colonial designs. Despite its rarity a number of cases in beautifully figured burl walnut both satin and polished finish were on display.

National Piano Co., Ltd., Toronto, Ont.—The National Piano Co. feature the Heintzman Bridge in their line of Mozart pianos. Many beautiful cases were on view at their booth this year including a very attractive instrument in fine Circassian walnut and an instrument in fumed oak, Jacobean in design. If one were to judge from the number of satin and natural finished cases shown, the highly polished instrument must be gradually losing favor.

The Dominion Piano & Organ Co., Ltd., Bowmanville, Ont.—The exhibit of this firm occupied a very conspicuous booth in the Manufacturers' Building. A number of organs including a pipe organ and pianos from various woods and finishes comprised the list. Instruments were shown in Circassian and burl walnut as well as in oak and mahogany. The exhibit was very attractive and drew a large crowd and much favorable comment.

The Amherst Piano Co., Ltd., Amherst, N. S.—The Cremonaphone is the name of the phonograph manufactured by this firm. A number of these instruments were included with their pianos at the Exhibition this year. The manufacture of phonographs was taken up a few years ago in a small way to meet the demands of their dealers but has since assumed large proportions. At present their output is 60 phonographs a week. Couple this with the piano production of 20 a week and you have a very busy plant. This large output is made possible through the use of modern machines, equipped with individual motors and numerous labor saving devices. The pianos on display comprised a line of staple instruments in popular woods and finishes.

Frank Stanley, Toronto, Ont.—The exhibit of the Stanley line of pianos consisted of a very representative showing of what might be called staple lines. Three designs were on display, the Louis, Colonial and Jacobean in mahogany and oak. A number of players were included, one being electrically equipped. Mr. Stanley states that he finds an ever increasing demand for player pianos. His production at present being equally divided between upright and player instruments, if the demand for the players continue to increase the uprights coming in on exchanges will largely take care of the demand for that class of instruments and production will run largely to turning out reproducing instruments.

Foster, Armstrong & Co., Kitchener, Ont.—The Haines Bros and the Marshall & Wendell are the two lines of pianos manufactured in Canada by the above firm. A number of instruments of both makes were on display at their booth at the Exhibition, including all the designs and finishes that are in demand at the present time. The reputation of the Haines and Marshall pianos is being well sustained by the high class

instruments that are being produced in Kitchener. Mr. Woodham, who was in charge of the exhibit, expects that the prices of pianos will materially increase.

Gerhard Heintzman Co., Ltd., Toronto.—The display made by the Gerhard Heintzman Co. at the Toronto Exhibition was a very attractive one. It included a number of high class instruments in various styles and finishes, such as, a Grand piano in mahogany, Louis XV. designs and several upright instruments in Louis and Colonial designs in mahogany and oak. Numerous Gerhard Heintzman phonographs were tastily displayed along with the pianos. The reputation and quality of this line is so well known to all who are musically inclined that little need be said.

Cecilian Piano Co., Limited, Toronto, Ont.—In the booth of the Cecilian Co. in the Manufacturers' Building a number of pianos and phonographs tastefully arranged were to be found. Nine pianos were shown including one especially designed for the British market. The Agraffe system is a feature of their line of instruments. Another point worthy of mention is the fact that their uprights are so designed that a player action can be readily installed at any time. A beautiful Empire model phonograph in burl walnut was shown, while in their new "Minuet" they have a moderately priced instrument with all the latest features.

Mason & Risch, Limited, Toronto.—The Mason & Risch, Limited, had practically their complete line on display in their booth at the Canadian National Exhibition. The pianos included two grand pianos and a number of upright cases in such designs as Louis XIV., Ionic, Mission, Colonial and Boudoir. In addition a number of player pianos and phonographs were displayed. Two of the exclusive features of the Mason & Risch line are the patent interlock pin block and sustension sounding board.

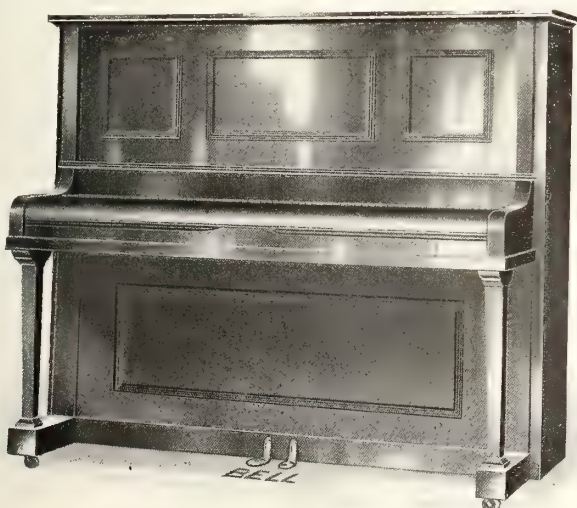
Newcombe Piano Co., Limited, Toronto, Ont.—The Newcombe pianos on display included a handsome Louis XV. model, burl walnut, natural wax finish. A mahogany player in satin finish, colonial designs and a variety of woods and finishes and a grand piano by the celebrated makers, the Wm. Knabe & Co. The Newcombe firm are featuring their adjustable power tension rods. These straining rods equalize the tension on both sides of the head block and add to the purity of the tone. The new rolling fall is also embodied in some of their instruments.

Sherlock-Manning Piano & Organ Co., London, Ont.—In their baby grand phonographs the Sherlock-Manning Co. have a very distinctive instrument. Two designs only are made in the various woods, such as walnut, mahogany and oak. These machines are fitted with universal reproducers, playing all makes of records and are equipped with four spring motors enabling them to play seven 10-in. records from one winding. The horn which is made of spruce is suspended from the throat. This feature improved the richness and clearness of the tone. The pianos shown were in the usual designs, woods and finishes and the Sherlock-Manning people feature a full size sounding board made of specially selected piano spruce.

Gourlay, Winter & Leeming, Toronto, Ont.—The exhibit of this firm was composed exclusively of their well known line of Gourlay pianos. A wide range of designs and finishes were displayed and included the Puritan design in Butt walnut and mahogany, the studio and the bungalow models in fumed oak and the Louis XV. and Queen Ann in walnut and mahogany. The Grand pianos were represented by an attractively designed miniature Gourlay Grand in mahogany. This instrument attracted a great deal of attention. A number of Gourlay phonographs in various designs and grades were shown in mahogany, walnut and oak.

Norheimer Piano & Music Co., Ltd., Toronto, Ont.—One of the newer developments in the piano manufacturing field that is embodied in the Nordheimer pianos, both grand and upright, is the duplex scale. This scale gives the rich, round, full tone that is so desirable in a piano and for which the Nordheimer pianos are noted. The instruments shown included several grand pianos and a number of upright cases in Louis, Colonial and Library designs. Several of these instruments were in walnut and finished in the new art finish. The Nordheimer art finish has a soft satiny finish that is hard to duplicate and the secret of which is jealously guarded.

Doherty Pianos, Limited, Clinton, Ont.—A large number of visitors were attracted to the booth of the Doherty pianos. A number of distinctive models in Louis XV. and Colonial designs were shown. A noticeable feature of this exhibit was an upright case in fancy burl walnut finished in natural with a wax finish. In securing this finish varnish is eliminated entirely, the result being secured by the use of filler, shellac and wax.



A Bell piano made especially for export trade



A Nordheimer design in crotch mahogany

Many Lines of Phonographs Shown

Manufacturers Vie With One Other in Their Displays—Suitable Building Should be Provided—Period Designs Attract Attention

The phonograph manufacturers were rather handicapped this year owing to the fact that they were unable to secure a building where all who desired could suitably display their instruments under one roof. As it was phonographs were to be found in tents, and in the Process, Manufacturers and Horticultural buildings. This should not be so.

Comparatively speaking the manufacture of phonographs is a new industry, but it has made immense strides and assumed vast proportions. It is here to stay and holds an important place in the industrial life of Canada. Therefore it is to be hoped that when the directors of the Canadian National Exhibition meet and discuss the changes and improvements that they are planning for the coming year, they will leave no stone unturned in an effort to provide a suitable building to house the many phonograph exhibits.

There is the Transportation building for motors, a machine hall for machinery and supplies, in fact, many branches of our industry have separate buildings. Why not a "Musical Hall" for the piano and phonograph business, and it is certainly worthy of it. Such a building could be so arranged that a suitable space would be provided for holding concerts and recitals, etc., and would provide a gathering place for all lovers of good music.

Many large and varied displays of phonographs were to be found this year. Unless particular notice was taken of the different musical exhibits it is not likely that the magnitude of the phonograph display was realized. In the manufacturers' building a number of the piano men included their lines of phonographs with the pianos that they were showing. This applied to such firms as Mason & Risch, Cecilian Piano Co., Gerhard-Heintzman, Amherst pianos, Sherlock Manning and others.

The full range of the Brunswick line was shown in a booth in the Process building. Included in the display was the attractive Italian Renaissance model that sells for \$2,750.00. This instrument is all hand carved, and the trimmings are gold plated. Power is furnished by an electric motor designed to use either direct or alternating current. The Brunswick instruments are equipped with Ultona all record reproducers and all wood tone amplifiers.

The McLagan display, in the Horticultural building, was a very attractive one. The chief feature of this exhibit was the design and finish of their cabinets. They seem to have broken away from the general idea of a phonograph cabinet and produced artistic instruments in low, period designs and finishes that appeal to all lovers of fine furniture. This was only to be expected from a firm who have gained a national reputation for their line of fine furniture for the home. The McLagan-Fletcher reproducer or sound box that is used on all McLagan instruments, reproduces all the soft, delicate tones, while at the same time eliminating all harsh, metallic sounds.

A very pleasing display was made by the Pathe Freres Phonograph Co. of Canada, Limited. The instruments shown included their staple machines as well as a number of artistic models in period designs.

and in various woods and most attractive finishes. Such well-known styles as Sheraton, Queen Anne, William and Mary, Jacobean and others were faithfully reproduced. The Pathe phonograph can be adapted to play all makes of records and is known for its sweet tone. This latter is secured by an all-wood sound chamber and the Pathe sapphire ball that takes the place of a reproducing needle.

The Columbia Graphophone Co. made an attractive display of their line of Columbia Grafonolas. The staple lines shown were of Canadian manufacture, while a number of the period models on display were until lately manufactured across the line. The tone control feature of the Grafonola is a very simple, yet effective one, comprising a number of leaves, which are controlled by a button. With these leaves closed the volume of music is very soft, and by gradually opening them the desired volume may be secured.

Another one of the well-known lines that were on display was the Edison phonograph in both disc and cylinder types. Edison spent a number of years and, it is said, three million dollars in perfecting his wonderful instrument. The instruments shown included a number of handsome cases in the different species of fancy woods. A Chippendale model was particularly well designed and made a stately, dignified instrument. An 18th century design after Adam, and a design reminiscent of the Italian Renaissance period were included.

The Paramount Phonograph and Record Co. of Montreal were unable to secure suitable quarters in any of the buildings and were, in consequence forced to display their line of phonographs in a tent. This fact did not prevent them from making a very creditable showing. This firm are practically a new one in the phonograph field, but have gone to work and brought out some very attractive designs. A feature embodied in some of their instruments that is seldom met with is where they carry the tone chamber down the back of the case and, in consequence, place the horn at the bottom of the cabinet. They claim that by increasing the length of the tone chamber improves the quality and volume of the tone produced. The period designs were represented by a William and Mary case, and a beautiful hand carved instrument in mahogany Chippendale design.

The Phonola was well displayed in a variety of attractive designs. This phonograph is manufactured by the Phonola Company of Canada, Limited, with factories at Kitchener and Elmira, head office, Kitchener, Ont. This is strictly a staple line, being made in all the popular styles and woods. The better cabinets are fitted with folding, concealed winding cranks, and in the Organola model a new feature is introduced through the placing of a number of graduated resonating pipes, which give that instrument a wonderful tone. The Phonola is made complete, including motor, tone arm, reproducer, etc., in the company's plants.

The Berliner Gramophone Co. of Montreal displayed their line of well-known Victrolas. These instruments were all equipped with the new Motrola. The Motrola is an electric attachment that take the

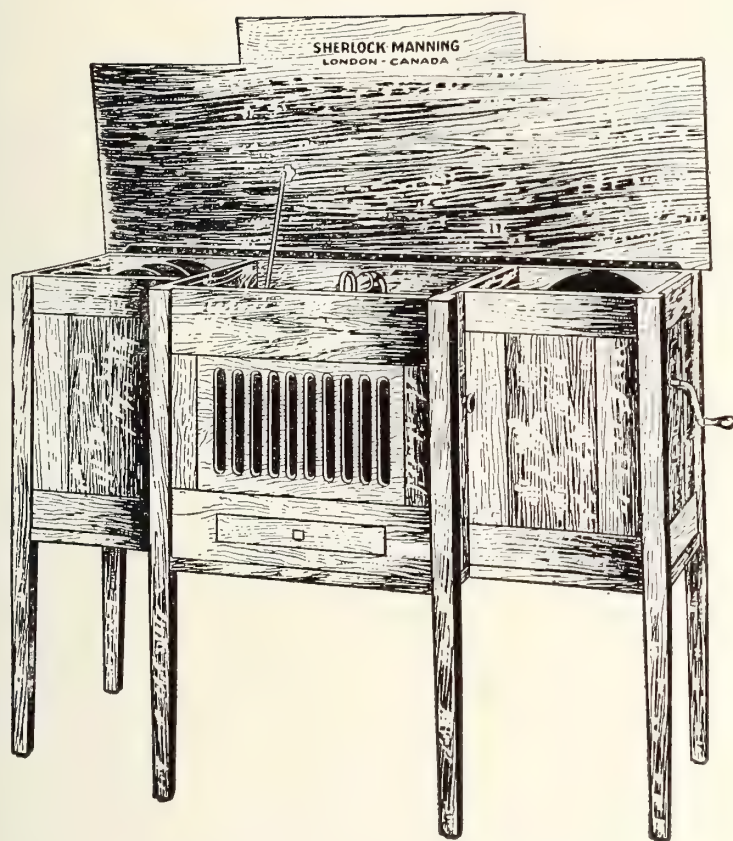
place of the crank and winds the motor by electric power.

"Clear as a Bell" instruments were shown in a variety of designs and woods. The idea of a bell is embodied in the graceful curved lines of the better grade Sonora instruments, which are made with a "bulge" near the top. The introduction of wooden tone arms permits the use of an all wooden tone passage, producing a clear, vibrant tone. The motor meter indicates at all times the number of records that the motor will play without rewinding.

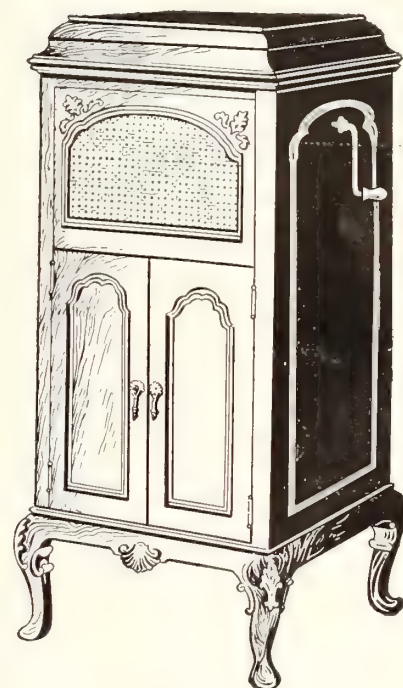
The Starr Company of Canada, London, Ont., had on display some very fine samples of the Starr line. The finest grade of silver grain spruce is used

for tone chambers and sounding board horn and, as expected, the result is a clear, mellow tone. The cabinets shown were in various woods and were exceptionally well finished. It is possible that before long this company will be in a position to supply Canadian made instruments.

Japanese lead pencil manufacturers will try out British Columbia cedar. The low land timber has been found too soft for this purpose, but it is hoped that the cedar on the benches and in the drier districts will prove satisfactory. Recently Japan has been taking considerable quantities of British Columbia cedar for finishing purposes.



Sherlock-Manning miniature grand phonograph



"Queen Anne" Pathe



An attractive period design (McLagan)



McLagan "Queen Anne" Phonograph

Varied Displays of Woodworking Equipment

Number of Well-Known Machinery and Supply Men Made Fine Showing—
Exhibits Included New Machines, Inventions and Supplies

A stroll through Machinery Hall at the exhibition proved to be a treat to anyone interested in machinery and supplies. A wide and varied showing of wood and metal working tools were shown, many in actual operation. The equipment and supply end was not overlooked. The displays that should prove most interesting to the readers of the "Canadian Woodworker" are briefly outlined:

Canada Machinery Corporation, Limited, Galt, Ont.—The C. M. C. exhibit at the Canadian National Exhibition this year was up to the standard set by their former displays. It was made up of a number of wood and metal working machines. Among the woodworking equipment the No. 611 edging and jointing saw took first place. This machine is capable of fast, accurate work. A sample, showing glue joints made right from the saw, was on view. The No. 18 Universal Rip and Cross Cut Saw came in for considerable attention. Some of the features embodied in this machine are a saw guard, splitting knife, adjustable cut-off gauge that can be quickly set to any angle, and is very handy for cutting segments, sliding table and a rip saw that can be swung at any angle, thus enabling the stock to be worked on the periphery of the saw. The rip and cut-off saws are mounted on separate arbors and can be readily brought into cutting box. A No. 823 buzz planer, fitted with guard and round safety head, a No. 221 heavy duty pony planer, capacity 24 x 8 in. and a No. 351 vertical hollow tooth chisel mortiser completed the list. A lathe, shaper and vertical drill took care of the metal working end of the exhibit.

The A. R. Williams Machinery Co., Limited, Toronto, Ont.—As usual the exhibit of this firm was a very complete one. The woodworking machines shown included a 36 in Preston Variety Band saw, with wire guard on upper wheel and solid steel doors covering the lower wheel. A small variety saw, No. 325, manufactured by the McKenzie Machinery Company, Guelph, Ont.; a 20 in. McKenzie Eclipse planer, matcher and moulder. Mr. Cronk, who was in charge of the exhibit, was very enthusiastic over this latter machine, claiming that it is ideal for hardwood trim, mouldings and phonograph cases, or other work where a fine finish is required on hard dry woods. The secret of the efficiency of this machine lies in a knuckle joint known as the Ross attachment, which is placed between the driving pulley and the cylinder head, and which eliminates all the vibration that might be transmitted to the head. The showing of metal-working machines included a grinder, miller, shaper and a number of lathes and vertical drills. A number of gasoline engines, both stationary and marine, together with other supplies, such as chain block hoists, steel split pulleys, tools, etc., were shown. It is not generally known that this firm handle a line of steam feeders and plumbers supplies.

Garlock Walker Machinery Co., Limited, Toronto, Ont.—The Garlock-Walker Machinery Company were in their old location at the east end of Machinery Hall. Their exhibit this year was larger than ever before, and more interesting. While the bulk of the machines shown were iron working tools, the company had ex-

pected to exhibit several machines from the line of the American Wood Working Machinery Company, but owing to unfilled orders at the factory no machines were available for exhibition purposes. One machine in particular, the Garlock-Walker people tried to obtain was the American No. 25 edging and ripping saw, which is a favorite and much in demand just now. Some recent purchasers of this machine are Anthes Furniture Company, Kitchener, Ont.; Heintzman Piano Co. Ltd., Toronto; National Casket Co. Toronto; Globe Casket Co., London, Ont.

An American single spindle reversible shaper and a double disc sander were part of the exhibit. In addition, a Kelley electric floor machine and a Kelley electric router were included. The former is widely used for waxing, polishing, sanding and scrubbing hardwood floors. This machine is a valuable piece of equipment for any firm manufacturing and laying hardwood floors, bowling alleys, etc.

Cowan & Co. of Galt, Limited, Galt, Ont.—There were several new machines in the exhibit of Cowan & Co. in the Machinery Building. The Richardson Hoop Forming machine attracted a lot of attention. With this machine it is possible to bend hoops at the rate of 6,000 to 8,000 per day without having to soak or steam the stock. Another new machine that they had on the floor was their new No. 317 combination woodworker. On this machine is found a rip, cross-cut and mitre saw; buzz planer and borer and mortiser, all conveniently arranged. Other equipment shown included a No. 315 scroll saw, No. 256 chain mortiser, No. M-288 vertical hollow chisel mortiser, No. M-280 power feed rip saw and a small bench buzz planer and jointer.

Dodge Mfg. Co., Limited, Toronto, Ont.—The Dodge people made their usual showing of Dodge wood, split pulleys, solid iron and pressed steel pulleys, friction clutches, single and double compression couplings; hangers, pillow blocks, conveying and elevating equipment and other items that go to make up the Dodge line of transmission equipment.

Elliott Woodworking Co., Limited, Toronto, Ont.
A new No. 5 model Elliott combination woodworker is a very efficient machine. This model may be equipped with either gasoline or electric power, as preferred, and is very handy for contractors and builders, carpenters, cabinet shops and other places where a light, portable machine is required. Some of the newer features embodied in this model are a "V" type drive belt, known as the "Whittle Belt"; elevating gears for the saw table and a new application of ball bearings to these slides. The fact that the saw is above the material to be cut greatly facilitates such work as grooving, routing, etc., as the work is all done in plain view. A hood is provided to take care of the saw dust and chips. The machine can be used for ripping, cross cutting, boring, buzzing and jointing, grooving, etc. A combination single head shaper and jig saw is built separately and can be readily belted to the other machine.

The Hoyt Metal Co., Limited, Toronto, Ont.—The exhibit of this firm consisted of a wide range of babbit metals and kindred lines, such as solder, lin-

type metal, lead packing, etc. Some of the lines of babbit shown were dynamo genuine babbit, frost king babbit, nickle genuine babbit, and ulco hard metal. This latter is a new product and judging from the result of different tests is a very superior anti-friction metal of comparatively high tensile strength and will give satisfactory service under any varied conditions.

Shurly-Dietrich Co., Limited, Galt, Ont.—The attention of all visitors who roamed through the Process Building was invariably attracted by the saws shown by the Shurly-Dietrich Co. of Galt, Ont. The saws were artistically arranged on three large panels, and included almost every conceivable shape and size of saw. In circular saws the range was from the small 1½ in. saw up to the large 7 ft. inserted tooth rotary saw. Space does not permit of a full enumeration of the lines shown, but some of the newer ideas might be touched on. A hand saw that will walk through nails seems to be a new department in the realm of hand saws. Another new design for the saw was a convex cutting edge for making openings in floors without first boring holes to enter a small saw. A new idea that is being embodied in the "Maple Leaf" line of hand saws is running the upper and lower edge of the saw plate through to the outside ends of the handle. When this is done the saw may be dropped, handle down, on the floor without any risk of the tips being knocked off the handle. A few other lines might be mentioned, such as grooving saws, trowels, straight edges, moulder and planer knives, swedges and side tracing tools. This is claimed to be the finest exhibit of saws that has ever been made.

The Chapman Double Ball Bearing Co. of Canada, Ltd., Toronto.—An exhibit in Machinery Hall that attracted a lot of attention was that of the Chapman Double Ball Bearing Co. The equipment on display included their well-known line of ball bearing transmission appliances including ball bearings for line shafts, loose pulleys, pillow blocks, etc.

A line of ball-bearing trucks was also on display. An interesting experiment was recently carried out in connection with the ball bearing trucks. Two trucks were taken, one ball bearing and one fitted with the ordinary solid bearings. When empty neither truck seemed to move more freely than the other, but when loaded with a one-ton weight the truck with the plain bearings took six men to move while a boy easily pulled the loaded ball-bearing truck. Ball-bearing transmission equipment effects a double saving; the Chapman people claim that 75 per cent. of the friction loss and 95 per cent. of the lubricating costs is saved when ball bearings are installed. An interesting display of ball and roller bearings in all sizes from the smallest up completed the exhibit.

The International Business Machines Co., Limited, Toronto.—A large number of labor saving, efficiency devices were on display in the booth of the above firm. Time recording clocks in various sizes and shapes made up the main part of the exhibit. These were designed for a wide variety of uses and were found in electric as well as automatic registering types. A very interesting instrument was a recording door lock. This lock is so designed that it makes a record every time the door is opened and thus enables any firm employing a large number of outside employees to keep track of their comings and goings. The Hollerith electric tabulator was demonstrated

and proved an interesting exhibit as well as an efficient machine.

Baines & Peckover, Toronto, Ont.—The showing of this firm in the Machinery Building consisted largely of steel and bar iron and reinforcements for concrete work. In addition they showed a very complete line of box ties and strapping and a line of metal belt and machine guards. The safety guards were made of expanded safety guard mesh with metal frames, and can be made any size or shape to suit all requirements. The box ties and strapping included corrugated steel fasteners, flat split iron strapping, peerless duplex strapping, corrugated turnings edge embossed and iron strapping; bale bands, tie, iron, baling buckles, punch tooth iron, corner irons, bung fasteners; pail and cheese box clasps were also shown.

Laidlaw Bale Tie Co., Limited, Hamilton, Ont.—An exhibit that attracted the attention of box manufacturers and other woodworkers who happened to pass by was that of the Laidlaw Bale Tie Co., Limited, Hamilton, Ont. The showing included nails and staples in various sizes and styles; shook and baling ties in single loop and cross head and irons in various sizes, grades and qualities for piano strings, boxes, brooms and brushes and tin mattress wire for woven wire springs. The puzzles, consisting of two bent nails that were distributed created no little amusement. Ties for shook average 4 to 7 ft. long and are usually made of 16 or 17 ga. material. The bale ties are made in all gauges and cut to any length, as required.

Goodyear Tire & Rubber Co. of Canada, Limited, Toronto, Ont.—The Goodyear exhibit in the Machinery Building at the Canadian National Exhibition consisted of a showing of their well-known brand of "Extra Power" belts in various widths and plies; also samples of a number of wide conveyor belts were shown. The balance of the exhibit was taken up largely by rubber hose, which was shown in great variety, including fire hose, air compressor hose, steam hose, garden hose, etc.

Gluing Wood Coated with Varnish or Shellac

Glue joints between wood surfaces which have been coated with shellac or varnish have low or very erratic strength. This has been thoroughly demonstrated by a recent test at the Forest Products Laboratory, Madison, Wis. Sixty pairs of test blocks were prepared in which one or both wood surfaces were varnished or shellacked and were joined with either casein or animal glue. A great many of these blocks fell apart before testing, and all which held together long enough to be tested sheared apart in the glue joint and not in the wood.

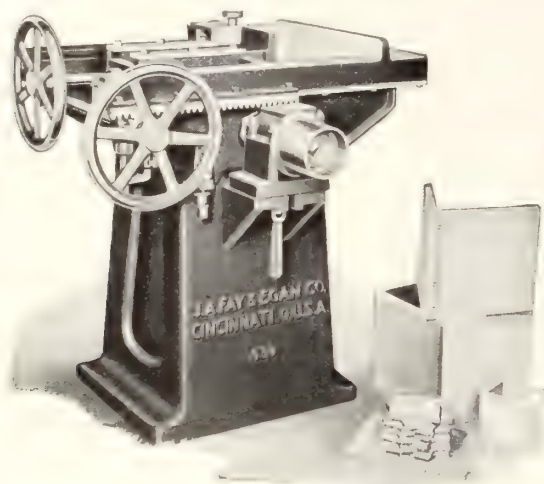
The highest strength value obtained was 1712 pounds per square inch, which is low for casein glue. The other values were 1,000 pounds per square inch or less. It is evident, therefore, that all shellac or varnish should be carefully cleaned from wood which is to be glued, if high strength is desired.

A few blocks were joined using shellac as a glue over surfaces previously coated with shellac. The maximum shear strength obtained was 1425 pounds, the minimum 450 pounds, and the average 758 pounds per square inch. These values are low and do not indicate that shellac has gluing properties which compare favorably with casein or animal glue.

Machine for Making Lock Corners

The illustration herewith shows a new lock corner machine that has been put on the market recently. This machine is especially designed for the rapid production of accurately matched lock corners and will find instant favor among the manufacturers of ammunition boxes, battery boxes, honey cases, medicine boxes, dresser drawers, tobacco boxes, etc.

It works stock up to 14 in. in width and any number of pieces up to a total thickness of 10 in. As only



Fay & Egan dovetailing machine boxes, drawer fronts, etc.

one end of stock is in the machine at one time, any length may be worked.

The column is a rigid cored casting with broad base and has a shaving chute cast in, which empties refuse at rear of machine and can be conveniently attached to the regular exhaust system.

The table is adjustable to suit the depth of cut to be made, the stock being dropped on the feed in table, which accurately gauges depth of the lock corner, thus making the cut in all pieces of uniform depth.

There is a big demand for lock corner boxes, but many manufacturers hesitated about entering this field because of the large initial investment heretofore required. The No. 439 "Lightning" Single End Lock Corner Machine is inexpensive and provides an opportunity for all who desire to manufacture this product.

The manufacturers of this machine will be glad to furnish full details and quote prices and deliveries to any one interested. Address, J. A. Fay & Egan Co., 153-173 W. Front St., Cincinnati, Ohio.

The Cowan Combination Woodworker

The illustration on opposite page shows a new combination woodworker brought out by Cowan & Co., of Galt, Limited. This machine is designed to meet the requirements of contractors, builders, carpenters and repair shops. It is very compact and easily portable, going through an opening 32 in. or over, in width. The combination consists of a 6 in. jointer, a rip and cut-off saw and a boring and hollow chisel mortiser attachment. The jointer is fitted with a 6 in. round safety cylinder and the table is grooved for rabbetting. The top of the saw table is the same height as the jointer table, so that if more room is required for cutting wide stock the jointer fence may be removed, thus increasing the table run. The saw is mounted on a swing arbor worked by a foot lever.

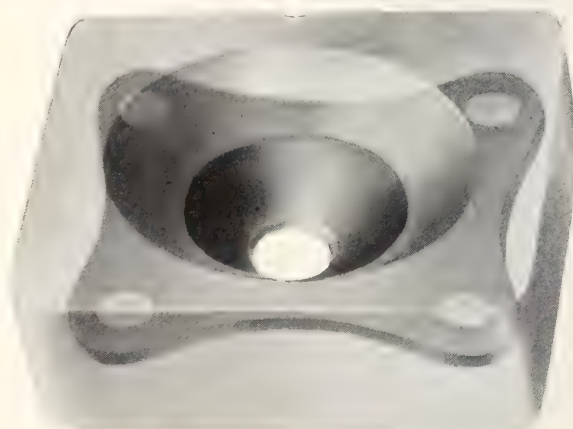
This gives the operator the use of both hands for handling the stock and permits long stock being cut more readily than when sliding gauges are employed. A sliding gauge is also provided. Both the sliding gauge and the rip saw gauge are adjustable for cutting angles up to 45 degrees. The boring attachment can be readily raised or lowered to suit different thicknesses of material. The wood table with fence is hand operated, simply shoving the material against the bit. The mortiser attachment consists of the necessary parts to operate the table by foot treadle and a movable fence for adjusting the different depths of mortises. It will take hollow chisel bits up to 1/2 in. This machine can be driven direct by belt from shaft, motor or engine, and requires 3 H.P. to operate.

A Portable Electric Router

The illustration on opposite page shows the Kelley Router and gives an idea of the variety of work that can be performed by this machine. The Kelley Router is manufactured by the Kelley Electric Machine Co. of Buffalo, the Canadian representatives for this firm being the Garlock-Walker Machinery Co., Limited, Toronto. This machine is a great time saver on routing stair strings for treads and risers and for producing a panel effect on newel posts, for routing columns, etc. The machine is also used for many operations that were formerly performed on a shaper and on these operations turns out a high grade of work in addition to being a time and labor saver. It is driven by an electric motor and operates at a speed of 6,500 R.P.M. The high speed enables it to make a smooth, clean cut. It is designed to operate on standard voltages so can be installed in most woodworking plants. Two of these machines were recently sold in Toronto, the purchasers being Batts. Limited, and T. H. Hancock.

New Rubber for Endless Bed Sanders

The accompanying illustration shows an efficient rubber cushion for endless bed sander that has been brought out recently by the Solem Engineering Co.,

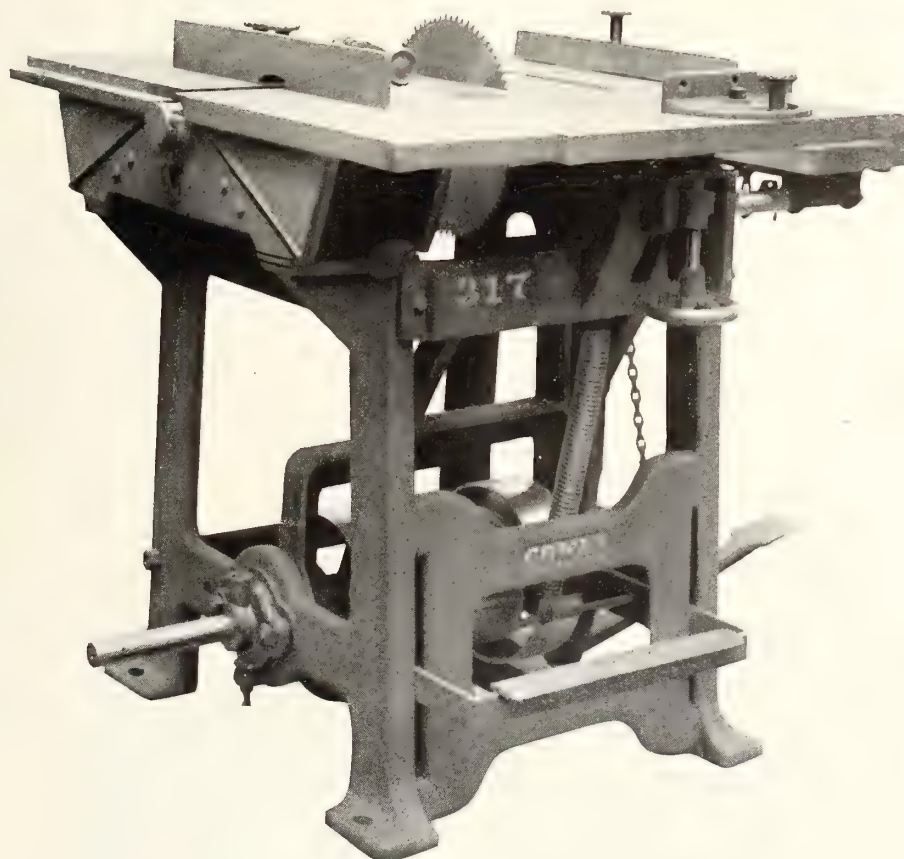


Square rubber cushions for endless bed sanders

Sheboygan, Wis. As shown, this rubber is made square, making this form of rubber especially valuable for sanding the edges of stock and for thin, narrow work. It is the metal reinforcement shown in the darker part of the illustration that made it possible to make a square rubber that would stand up under service.



Kelley Electric Router, showing samples of work



No. 317 Cowan combination woodworker

Upholstering and Trimming

Making Most of Their Opportunities Number of Furniture Manufacturers Display Upholstered Lines—Valuable Publicity Gained

A number of upholstering firms took advantage of the large crowds which gathered daily at the Canadian National Exhibition to display their furniture in attractively arranged booths. Most of the displays consisted of apartment furniture, that is, folding davenports and chesterfields, which are in great demand at the present time. The crowds that gathered evinced much interest in the goods on display and many and varied were the questions asked. Displays of this kind not only advertise the different lines shown, but bring this class of furniture forcibly to the attention of many who did not realize the value and practicability of folding beds. The following lines were exhibited:

The Kilgour Davenport Co., Limited, Toronto, Ont.—The pieces shown by this firm go to make up what might be called an "apartment line." One of the features was their "Libby-Dine" tables. This is one of the newest ideas in combination tables. To all appearances it represents a very attractive living-room table in one of the period designs. The pull of a lever raises the top and two leaves are brought out, converting it into a full size dining-table. Another pull of the lever and the top drops down flush with the leaves. In keeping with this useful table is their line of davenports and divanites. These can be used as chairs and chesterfields during the day and converted into comfortable beds at night. Furniture of this kind is very appropriate during this period of high rents.

The De Luxe Upholstering Co., Ltd., Kitchener, Ont.—Some of the very latest creations of the upholstering art were included in the exhibit made by the De Luxe Upholstering Co. One of the latest lines shown was a three-piece living-room suite covered in high-grade tapestry. The pieces were made in large proportions with cushioned arms and small wings

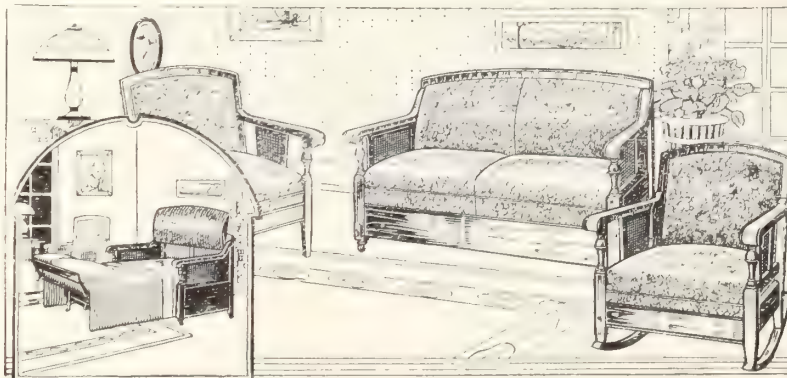
through the back. One very attractive piece was covered in a rich blue silk plush. A number of luxurious chesterfields were shown in various designs and covered. Included in this exhibit were a number of attractive parlor lamps and a couple of walnut tables made by the Bates Bros. Co., Limited, of Kitchener.

Sims-Till Mfg. Co., Limited, Toronto, Ont.—The S. T. line, which was on view in the Process Building, embodied a number of new features. The pieces shown include a divanite chair, a model called "baby grand," which makes a three-quarter couch and is full sized divanite. One of the newer ideas is that the arms fold down with the mattress so that a person does not sleep between the arms. These divanites are constructed so that they will take a full-sized mattress. This adds considerably to the comfort of the bed.

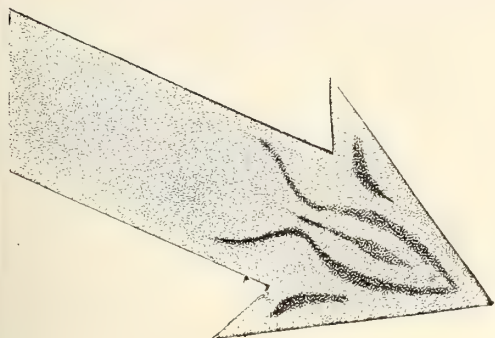
Kindel Bed Co., Limited, Stratford, Ont.—This firm made a very attractive showing of high-class chesterfield beds and folding davenports. Those on exhibit included a comfortable bed chesterfield in tapestry; a plain chesterfield and a number of chesterfield chairs. A three-piece period suite was shown in striped velour. The frame was of walnut with cane panels in the end. This made a very desirable suite for a living room as the davenport could be pulled out and made into a comfortable bed as the occasion desired. The Kindel Bed Co. have been enlarging and improving their plant at Stratford, and expect to turn out bed davenports and similar lines to the value of \$500,000 during the present year.

Interesting Work on Upholstery

Under the title "Furniture Upholstery," Emil A. Johnson, B.S., A.M., Assistant Professor of Manual Arts, Peoria, Ill., has prepared a well illustrated, practical work on this field of endeavor. The subject is treated in a very comprehensive manner. The first part deals with the history of upholstery and the tools required, the second, with upholstery without springs, such as foot stools, chair seats, etc., the last part with upholstery with springs.



Three piece Divan-O suite, Kindel Bed Co., Limited, Stratford, Ont.



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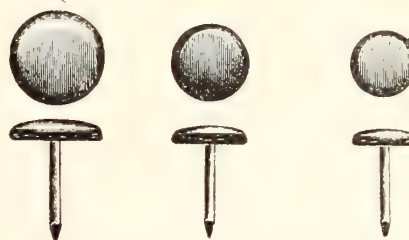
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The Application and Use of Thinners

Two Classes of Solvents, Volatile and Non-Volatile—Derivation, Use and Speed of Various Materials

By Dixie Wells

Previous articles have explained what may be expected from proper stains and varnishes where high grade materials are used. A few details regarding paint vehicles may be of interest, particularly in these days when there is a growing demand for high grade painted and enamelled furniture.

It might roughly be stated that the vehicles used in enamel and paint are confined principally to two classes, volatile and non-volatile. The former comprises the thinners or that part of the vehicle which adds to the bulk. It also cheapens, flattens, cuts down the weight and causes ease of manipulation for the workman.

We have but few real thinners, but a great many names covering a multitude of sins, for every thinner, perhaps camouflaged under that name, is not always applicable for extending a given finish. The factory foreman, therefore, must have keen judgment so as to enable him to select proper thinners to meet each finishing problem, thinners which will give the best results on the job. This intelligent type of foreman finisher will not only figure from the standpoint of bulk cost, but what is absolutely essential, must know that the material in a finished state will not break, settle hard on standing, curdle or liver. He must be sure that the mixture will not brush out in streaks or spray in what is known as shot form. Altogether, he must know that his grinding vehicles and the non-volatile portion of his thinners will act satisfactory in accord with the volatile portion.

No Hard and Fast Rule

There are some pigments which when ground will absorb and take more oil than others, owing to their bulky properties. Pigments of this class will stand more thinning than those which are less bulky and still retain the body necessary for satisfactory working. On the other hand, the nature of the volatile thinners governs largely the speed of the finish. By this is meant the length of time required for the paint or varnish to set so that the finished piece may be handled with safety. Always bear this in mind when the specifications call for fast work.

Volatile thinners may be classed under two headings, and are recognized as being derived either from petroleum or wood. From the latter we get two turpentine—wood and gum. From crude petroleum we get benzene (light), medium or special naphtha, and a heavy naphtha which we call turpentine substitute. Apart from its bad odor wood turpentine is not unlike gum spirits when properly made, but finds little call for use in the better grades of material.

Now, gum turpentine comes from the long leaf

pine and is distilled from the gum. Unlike the wood turpentine it has a sweet smell and is very clear and white in color. Of course, turpentine has many substitutes all of which have petroleum basis, and carry just enough turpentine to permit them the name under which they are sold, names which are many, such as—Turpene, Turpol, Royal Turpene, Turpaline, and many other names which are more or less familiar to the trade.

There are many advantages in petroleum thinners. In the first place they are rather inexpensive, and the several grades allow the purchaser much more latitude in selection, for the foreman's or factory superintendent's O. K. All these are made by a series of fractional distillations from crude petroleum distillations, which represent a particular chemical and physical phase in its range, and are chosen and combined in a way which gives their respective places in the index of thinners.

Drying Speed of Different Solvents

There are many petroleum products which come from Texas which have an asphalt base. They have a strong odor and evaporate a little slower than those petroleum products which we get from the Ohio Valley. The rapidity of evaporation depends upon the bulk of the fractions which distill at the lowest temperatures. Benzene, therefore, is the fastest, special naphtha comes next. The other three—heavy naphtha, Turpol and turpentine are about in the same class as heavy thinners. They are good for their oily property in increasing bulk and rendering the paint or enamel easier to use.

Benzole and turpentine virtually are of the same specific gravity, but differ radically in distillation figures. The reason for this lies in the internal physical make up or the strain to which the molecule is subjected in order to maintain its equilibrium. Of course, if this strain is normal under particular conditions you obtain a certain effect, but if the strain is abnormal, under similar conditions a certain different effect is obtained, and in these two strains we have the two effects which relate themselves to benzole and turpentine respectively.

In many naphthas which are heavy, particularly, those which have an asphaltum base we find varying normal fractions, between the distillation limits, but they carry an excess of non-drying, non-volatile residue. Of course, this is a short-coming which is shown by a chemical analysis and which is considered sufficient cause for rejecting the material. Don't forget that chemical analysis is the only safe way to detect adulterants, as by it you will uncover and lay bare the admixture of heavy oils like kerosene and paraffine, these being adulterants which are very undesirable in a good class of thinners.

Aid in Producing Flat Finishes

Thinners play a very important part in the matter of flattening a finish, but to get the best results in flat

work we would always advise that the pigment be ground in a flat or semi-flat vehicle. It is well known that turpentine gives the best flat results, but exceedingly flat work may be obtained with the naphthas, especially the heavy ones.

If a pigment is ground in a straight linseed oil or linseed oil high gloss varnish, the amount of thinners

necessary to flatten this pigment will be so excessive that your material will be unfit for use.

The intelligent finisher, one who is an expert in his line, can secure a semi-flat satin or eggshell finish or reduce the gloss in the first coat so as to better the whole for the mixing, but he will not be able to secure a true flat effect on a gloss base.

Choosing Solvents for Various Purposes

(Continued from the August issue)

Alcohol (C_2H_5OH)—

is usually obtained in this country from grain, while in Europe potatoes are largely used. In either instance the first part of the process consists in changing the starches into a sugar known as maltose.

Outlining the process in which grain is used; a quantity of barley is moistened with water and is allowed to germinate (or ferment), forming malted grain. A small portion of this malted grain is used as a kind of yeast, being mixed with a larger portion of the raw grain. The two are placed in a tub and agitated with warm water in order to assist in the fermentation. The process changes the starches into the sugar known as maltose. The liquor formed in the tub is known as wort.

When the wort reaches the required density it is drawn off. More hot water is added to the grain and the process is repeated. This in turn is drawn off and run into the first wort. These two liquors are cooled to the temperature of fermentation and kept at this temperature from three to nine days until the mixture has reached the limit of fermentation. During this period the maltose in the wort breaks down into a product containing alcohol and carbon dioxide. This product is reheated in a fractional still and again subjected to distillation until a very pure alcohol is obtained. This alcohol is known commercially as ethyl (or grain) alcohol.

As the government imposes a heavy tax on all ethyl alcohol because it can be used as a beverage, it was impossible to use this alcohol commercially as a solvent because of its increase in cost. To remedy this it was necessary to obtain an alcohol which was unfit for use as a beverage, yet suitable for manufacturing purposes. This the government defined as denatured alcohol, which is ethyl alcohol mixed with a pyridine base. This has an offensive odor and renders it unfit for use as a beverage, but does not impair its commercial value. This commercial alcohol is known to the finishing room as C. D. alcohol and is used as a solvent for all spirit anilines and shellac.

Alcohol has a tendency to absorb moisture and when not in use in the finishing room should be kept in sealed containers. This is important, because alcohol which has absorbed too much moisture, when used as a reducer in shellac and shellac substitutes, will cause the shellac to turn white during application, due to the precipitation of minute particles of the gum.

Linseed Oil—

is obtained from the seed of the flax plant. The seed is crushed by passing it through heavy steel rollers. This is known as ground flax seed. The ground seed is conveyed into a steam-jacketed heater with rotating arms, known as an agitator. Live steam is injected into the meal, which raises the temperature and causes it to absorb a moderate amount of moisture. After it has been heated to the proper temperature the meal

is transferred to a "former." This is a machine which molds the meal into cakes. Each cake is wrapped in a cloth and put into a hydraulic press. Here pressure is applied and the oil squeezed out, leaving the dry meal inside of the cloth.

The oil, as it comes from the press, contains more or less meal and moisture, commonly called "foots." The "foots" are separated from the oil by means of a filter press and the oil is pumped into settling tanks, where it is allowed to age for a couple of weeks and is then ready for use.

Linseed oil is the best drying oil used in the finishing room. Unlike most solvents, which dry by evaporation, linseed oil dries by oxidation which, when used in wood fillers, forms a permanent and satisfactory base for succeeding coats of varnish or other finishes. Linseed oil is marketed as raw linseed oil, refined or bleached linseed oil and boiled linseed oil.

Ammonia 28° (NH_4OH)—

is obtained as a by-product from the manufacture of illuminating gas. Ordinary illuminating gas is obtained by the distillation of coal. The crude gas contains ammonia, coal tar and other by-products. During the distillation the gas is passed through a "scrubber," which consists of horizontal cylinders, the interior walls of which are kept moist by jets of water.

The gas, in passing through the scrubber, is washed, allowing the absorption of the ammonia by the water. This solution is known as the ammonia liquor. This liquor is passed through a series of narrow heated tubes. The heated liquor is forced into a tall tower, where it meets a current of steam. Here the volatile ammonia is liberated. The volatile ammonia is passed through an absorption vessel containing sulphuric acid and here the crude ammonium sulphate is formed. When this liquor becomes a saturated solution it is cooled and the crude ammonium sulphate crystallizes and settles to the bottom of the absorption vessel.

The crystals are mixed with lime and redistilled. The pure ammonia gas thus formed is absorbed by water, forming "aqua ammonia" of varying strength. That used commercially is known as 28° ammonia and is used extensively in the finishing room in fumed oak stains.

Turpentine ($C_{10}H_{16}$)—

is obtained chiefly from long leaf pine trees. During the winter, before the sap begins to rise, a notch or box is cut in the tree, near the ground. At intervals during the summer the bark and a portion of the sap wood are removed from the trunk above the box. This method shortens the life of the tree, but can be remedied by collecting the sap in cups, which is more efficient, also giving a greater yield of resin and turpentine.

In the spring the crude gum starts to flow and collects in the box. This is removed from time to time. This gum, containing water, chips, dirt and



In Chippendale's Day

WHEN Thomas Chippendale was designing and carving the splendid pieces that have been coveted and imitated ever since, wood finishing was a matter of crude stains and patient, back-breaking labor. How many more genuine Chippendales there would be today if this great artisan had had access to

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SPARTAN ART WOOD
STAINS

These differ from Chippendale's about as modern shoe manufacturing differs from "cobbling." Marietta stains and other products are for the manufacturer who faces problems of output—speed, economy, etc.—yet who must maintain the maximum of beauty and quality in his finishing.

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MARIETTA, OHIO, U.S.A.
Southern Factory, High Point, N.C.



STAINS ENAMELS
FILLERS VARNISHES
SURFACERS PAINTS

other impurities, is taken to a still which is connected to a warm condenser. In the still the gum is first slowly heated and the greater part of the solid impurities are skimmed off. The heating is continued slowly to avoid frothing when the gum begins to boil.

As the gum boils the vapors pass through the warm condenser and are collected in a separator in the form of water and turpentine. The turpentine, being lighter than water, rises to the top, and is drawn off. This is known as spirits of turpentine. It is run into barrels ready for shipment.

Turpentine is widely used as a reducer for varnish gums and makes an ideal filler reducer. It is used to some extent in golden oak oil stains, but it is not advisable to use it for a reducer in aniline oil stains, as it will cause precipitation of some of the oil powders. Turpentine has a wide range of uses in the finishing room, with which every finisher is familiar.—Finishing Facts.

Procedure for Finishing Mahogany

The following specifications were drawn up by the Adams & Elting Co., Chicago, for one of the largest American manufacturers of phonographs. While these refer specifically to finishing a cabinet in antique brown mahogany of an Adam or red mahogany where desired it would merely be necessary to vary the shade of the stain.

A perusal of these specifications will give one a idea of the operations necessary to secure a satisfactory finish on mahogany.

Operation 1. Use Ad-el-ite aniline brown mahogany water stain No. 5060 soluble in water. Stain to be mixed in such proportions so as to match sample board, brown mahogany standard shade. This stain can be either brushed on or cabinet dipped, but must be done in such a manner that the stain will produce a uniform shade or a uniform color over the entire cabinet.

It will require about 12 hours to dry stain, air dry and will require about 4 hours kiln dry, that is, in various kilns.

Operation 2. A thin coat of white shellac or a wash, should be applied over stain. This to be allowed to dry for 4 or 5 hours. Will kiln dry in 1 hour.

Operation 3. Then sand the shellac perfectly smooth with 00 sand paper and remove dust.

Operation 4. Use Ad-el-ite brown mahogany paste filler No. 1780 brown mahogany standard shade. This paste to be thinned with naphtha or benzine to about 10 pounds to the gallon, depending entirely on the texture of the wood, and to be applied with a soft brush and left to dry until thoroughly set, say about 15 or 20 minutes, then rub the filler in the pores of the wood with burlap, tow or sea grass and then wipe dry and clean with dry rags. All the surplus fillers to be removed from corners, crevices and carvings and surface.

The filler must be left to dry 48 hours, air dry, or 12 hours kiln dry for the purpose of getting the filler thoroughly hardened in the pores of the wood and prevent shrinkage thereafter.

Operation 5. Shellac with white shellac, leave from 6 to 8 hours or when dry.

Operation 6. Sand paper entire cabinet with 00 sand paper until perfectly smooth.

Operation 7. Use Ad-el-ite crystal congo rubbing and polishing varnish No. 115 or its equal. Apply with Fitch brush perfectly even over the entire surface

without any runs, sags, drops or wrinkles. If air brush is used for putting on varnish, it must be put on perfectly even over the entire surface without any runs, sags, drops or wrinkles or pitting. Leave varnish 48 hours to air dry or 12 hours to kiln dry.

Operation 8. Sand paper varnish with 00 sand paper perfectly smooth to remove all dust.

Operation 9. Use Ad-el-ite congo crystal rubbing and polishing varnish No. 115 or its equal. Apply the same with Fitch brush. Coat perfectly even without runs, sags, drops or wrinkles. If air brush is used for putting varnish on, put on perfectly even over the entire surface without any runs, sags, drops, wrinkles or pitting.

Operation 10. Sand paper varnish with 00 sand paper perfectly smooth and remove all dust.

Operation 11. Use Ad-el-ite congo crystal rubbing and polishing varnish No. 115 or its equal. Apply the as in operation 9. Leave from 6 to 12 days to dry, air dry or will kiln dry in 48 hours. Wish to say here bear in mind that entire cabinet will be very warm, hot, when taken from kiln and therefore recommend the varnish be left to cool off for at least 24 hours before rubbing or polishing.

Operation 12. Oil rub or water rub cabinet either by hand with felt block or by machine. In either case use FFF pumice stone. The varnish surface should be thoroughly rubbed down to a smooth finish until a perfectly dull or satin or velvet finish is produced and all foreign substances such as pumice stone and greases and dust must be removed from the surface of the cabinet.

The inside of the cover on cabinets including motor board must be finished equally as good as the outside of the cabinet. The inside of lower parts of cabinet to be finished equally as good as the outside of cabinet but one less coat of varnish will be sufficient for the lower insides but must be rubbed dull on face side.

Ad-el-ite mahogany brown oil stain No. 5160 brown mahogany standard shade may be used on the inside of the cabinet if such is preferred.

Food for Thought

A retail dealer said to a factory salesman: "Forty dollars for Colonial buffet is too much; it is a prohibitive price."

The reply was like this: "All right, let us see! You would have to get \$80.00 for it, wouldn't you?"

"Yes."

"Well, the workman that wants this buffet is now getting \$4.00 per day. We will cut his wages to \$3.00 per day and reduce the price of the buffet to \$32.50. You could then sell the piece for \$65.00?"

"Yes."

"All right; your purchaser has saved \$15.00 on his buffet, which will last him a life time, but he is losing \$1.00 a day in wages, or \$300.00 for the year. You not only lost \$7.50 profit on the sale at the reduced price, but you also lost a chance at the extra \$285.00 your customer would have had to spend if his wages had continued at the higher rate."

The dealer's reply: "I never thought of that."

Ball-bearings properly housed save an enormous amount of oil during the year. This should be deducted from the cost of the bearing when calculating its cost.

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We know that the furniture manufacturer is faced every day with varnish problems that require technical service and advice and to that end we have perfected a service department that we are sure can be of immense assistance to you in your particular line.

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Our varnish plant in Toronto is the largest and most modernly equipped in the Dominion and fully equipped to take care of your every need.

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The Flint Varnish and Color Works
of Canada Limited

63 Bay St.



TORONTO



Increasing speed and reducing costs
while making certain highest quality
work, in your finishing room with

Aeron System
Finishing
Surpasses brushing

Spray-finishing Equipment

Whether you manufacture phonograph cabinets or chairs, metal filing cabinets or brass beds; whether you varnish, enamel or lacquer those products, 1 Aeron operator will do at least 4 or 5 times as much work as a brush finisher in the same time.

On every class and grade of work the sprayed-coating will be uniform and free from brush marks, runs, fatty edges and like faults.

Aeron System exhausting equipment will insure a clean, healthful place in which to work; and reduce any fire hazard.

The outfit will be on the job every day, and cost very little to operate and keep up.

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We guarantee that the process used in the manufacture of Kane Vegetable Veneer Glue, and also the dissolving with **water and caustic soda** in the usage of same by the consumer, do not infringe any patents, and particularly the patents recently construed by the Court of Appeals of the Seventh Circuit, or the Decree of the U. S. District Court at Chicago, signed August 5, 1918.

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Veneers AND Panels

Suggestions for the Use of Laminated Construction

By A. L. Heim*

Laminated construction may be defined as the construction of heavy planks or blocks from layers of thin stock suitably joined together by means of glue or other mechanical fastenings.

This method of construction is now employed in the manufacture of a number of common products for which, only a few years ago, it was considered necessary to use solid stock. The change may be accounted for, in part, by the fact that heavy stock of many species in common use is becoming scarce, especially in the higher grades. The use of laminated construction permits the cutting away of defects in the thinner stock and produces practically clear blocks without the waste of any considerable amount of material. Also, much material, such as slabs, edgings, and trimmings from mills and factories, which would otherwise be wasted, may be utilized. By using the thinner material it is possible to complete the drying operations in a relatively short time, thus eliminating the necessity for carrying a large stock on hand.

While this process of construction is being employed in a number of industries with remarkable success, there are many others in which it would seem that the same principles might be applied with equal advantage. However, the product must be very carefully studied to determine the best type of construction. If the article is to be used under extreme conditions of moisture, the fastening must be suitable for such service and a special finish may be necessary. Other conditions of manufacture and service are equally important and should be given most careful consideration before any extensive program of manufacture is entered upon.

The Forest Products Laboratory at Madison, Wis., has made a special study of glues and of the methods of application that will give the most satisfactory results. Investigations of various types of laminated construction have also been made, and articles

manufactured at the Laboratory have been tested in service.

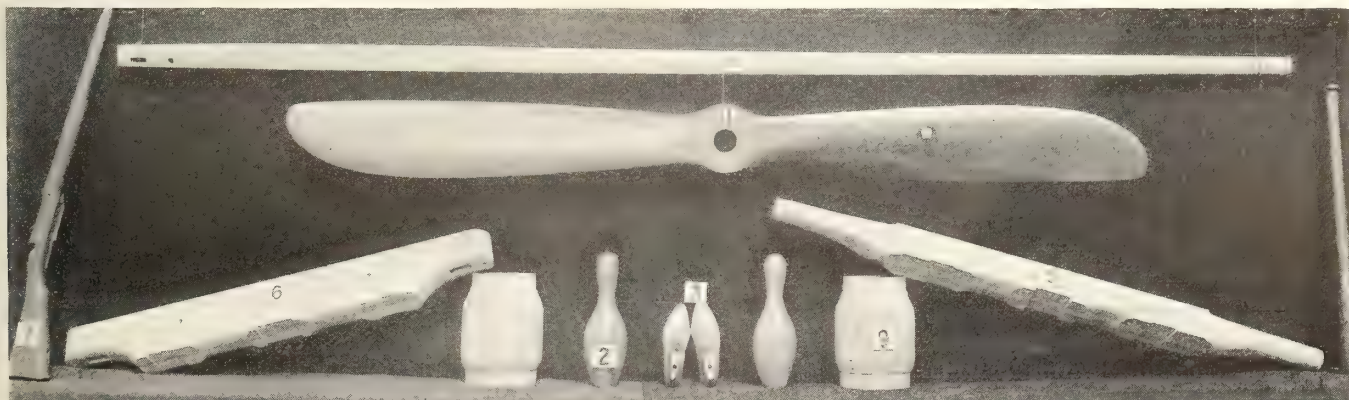
The built-up beam is one of the most common examples of laminated construction. In this case it is possible to construct a built-up stringer, using a number of thin joists spiked or bolted together, which is superior to a solid beam of the same dimensions. The large timbers used for dredge and derrick booms and masts can also be constructed in this manner. This article, however, has special reference to products made from glued-up stock. Porch columns and stair rails are among the most common examples of this class of articles, and airplane propellers are probably the most exacting.

In the manufacture of shoes there are several methods of construction, but all of them require the use of lasts over which to shape the shoe. Practically all of these lasts are made from solid maple blocks, the price of which has more than doubled in the last two or three years. To prepare the rough blocks for turning, they are usually stacked up and allowed to air-season for several months, after which they are kiln-dried to the desired moisture content. This process, of course, requires the storage of enormous quantities of the blocks. The insurance costs and interest on the investment for many months must be accounted for in the selling price of the blocks.

The Forest Products Laboratory has established co-operation with one of the large last manufacturers and has put into service several dozen pairs of lasts turned from glued-up blocks of both maple and birch. Both species are giving complete satisfaction in two shoe factories, and there is every indication that laminated shoe lasts can be used with satisfactory results in the manufacture of any type of shoe.

One promising field for the application of laminated construction is the manufacture of athletic goods. Bowling pins are practically all made from solid maple blocks, which not only are difficult to obtain but also

*Engineer in Forest Products, Forest Products Laboratory, Forest Service, U. S. Department of Agriculture, Madison, Wis.



Articles made from built-up stock

require a long time for drying. While numerous patents have been granted on various types of construction intended to produce more serviceable pins, most of these types are very expensive and unable to compete in manufacturing cost with solid wooden pins. To determine the possibility of utilizing a large quantity of maple slabs and trimmings now practically wasted, the Forest Products Laboratory has manufactured and tested several sets of pins made from this material. The blocks were glued up of one-inch material with the joints running lengthwise of the pins and then turned in the usual manner. Service tests were conducted by placing these pins in regular use on public bowling alleys, and the results indicate that the laminated maple pins are just as good as those made from solid blocks. There is no reason to suppose that a better pin can be produced in this way, but they are just as good for all practical purposes and fill the needs of this service.

Dumb-bells and Indian clubs require no special construction so far as strength is concerned, and might just as well be built up as made from solid stock. Baseball bats have been made up by gluing together one-inch white ash edgings and these are giving as good service as solid bats.

During the war the scarcity of heavy planks of black walnut suitable for gunstocks and the difficulties experienced in drying this class of material led to the development by the Forest Products Laboratory of laminated gunstocks. These were built up of three plies of one-inch stock glued with water resistant glue. Severe tests, as by soaking and boiling, demonstrated that this method of manufacture is entirely feasible.

Another field for the use of laminated construction is the manufacture of vehicles and agricultural implements. While many of the heavier parts of these are now being made of steel, wood is still used in enormous quantities, and many parts require heavy stock, which is very difficult to dry. Some of the parts to which laminated construction seems suited are: axles, bolsters, wheel hubs, wheel rims, poles, sled runners, doubletrees, reaches, brake blocks, and plow beams.

The Forest Products Laboratory has already made up specimens of laminated wagon axles, bolsters, poles, wheel rims and hubs. As yet, the tests in actual service have not continued a sufficient length of time to give conclusive results. However, a few specimens placed under extreme conditions of test show excellent results, and there is every reason to believe that this method can be applied to many of the vehicle and implement parts now made from heavy stock.

The Laboratory has received numerous requests for information on possible substitutes for yellow poplar which is desired in pieces 8 by 8 inches. It appears that this material is required for the manufacture of hat blocks and is very difficult to obtain. The laboratory already had in service several hat blocks manufactured from stock glued up of one-inch poplar. While these have been in use only a short time, they seem to be satisfactory and can be made up at a much lower cost than those turned from solid stock.

The illustration shows some of the laminated products under investigation at the Forest Products Laboratory, where every effort is being made to encourage the use of laminated construction for the purposes to which it is adapted.

These few instances in which laminated products have proved practically equal to those made from solid stock are only a beginning, and it may be expected that the increasing scarcity of certain species, together with the consequent high prices of the available stock, will do much to further the use of laminated construction. The development of new glues, especially those with water-resisting properties, will also promote the use of this process.

In taking up a new product and attempting to substitute laminated for solid stock, it will be absolutely necessary to study the requirements and conditions of service very carefully, to determine the most suitable binder and the best method of assembly. Another point which must be borne in mind is the fact that there is generally a certain amount of prejudice against any new departure, and thorough service tests should precede any attempt to put the product on the market.

Safeguarding Your Veneer Plant

By R. T. Solensten*

Safeguarding is always the first step in any accident prevention campaign because it is essential to the success of any safety work which the employer may inaugurate. There are hazards associated with the operation of machinery which cannot be satisfactorily dealt with except by the attachment of suitable guards. But there is another and equally important reason why safety work should begin with the improvement with the machinery and physical equipment. No employer will get very far in his safety work if he does not have the co-operation of his men. To get that co-operation he must convince his workmen that he is sincere in his efforts and that he is willing to do his part. It is useless for the employer to go before his men to make a fine speech about the importance of preventing accidents and to tell them how they may avoid getting hurt by being more careful, unless he is doing something himself to make his factory as safe as possible, because workmen look upon that as his moral obligation.

But when they see the employer spending money for guards, repairing bad floors, building oilers' walks and runways, improving the lighting, putting in an up-to-date system of heating and ventilation, and adding other improvements that will increase the safety of operation, then they realize that he means business and then they are usually ready to give him whole-hearted co-operation in his efforts to reduce accidents.

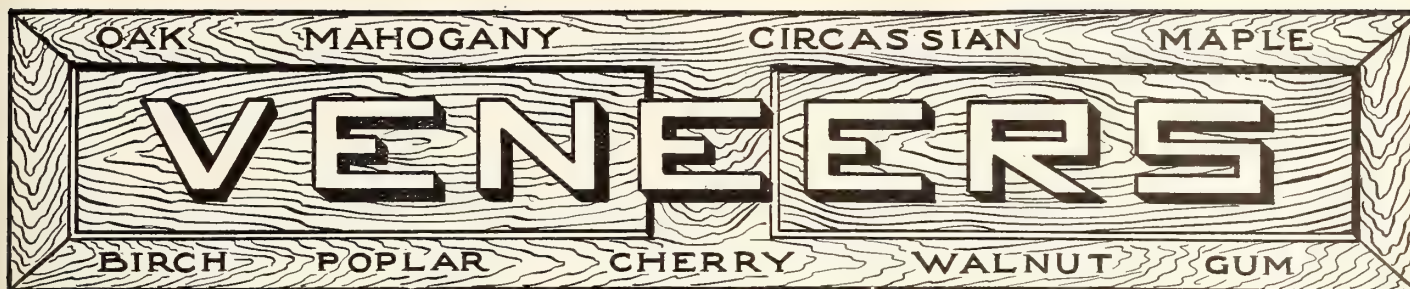
There are certain general principles which should be observed in the design and construction of safeguards:

1.—A safeguard should be so made that it will prevent all accidents on the part guarded—not only accidents to the operator while at his regular work, but also to the operator or passers-by in case they slip or fall or carelessly touch the machine.

2.—The guard should be so designed that it will not interfere with production. If it does, it is liable to be taken off.

3. In general, the guard should be attached to the

*Assistant Secretary, National Safety Council, Chicago, Ill.



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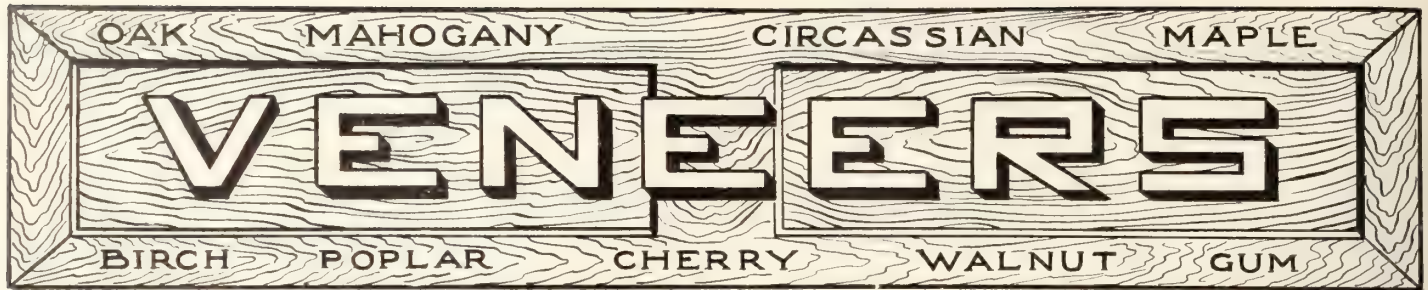
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Obviously that is not a literal fact, but it is entirely true that the present generation controlling our business is able to operate on strictly northern grown logs of as high a quality as any cut by our fathers who founded the business on this same site fifty-two years ago. Many buyers are today using Hoffman Brothers lumber and veneers who secured part or all of their requirements from our mills when this business was founded.

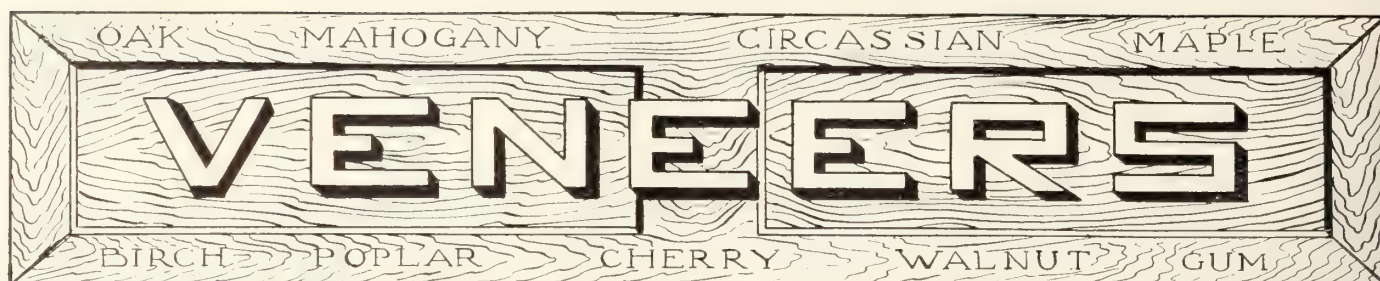
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With each generation the family tradition of unalterable integrity of product and business practice has been strengthened. The truest story of our business is told in the class of customers who use our goods and the reputation which their goods, made with H. B. veneers and lumber, have in their markets.

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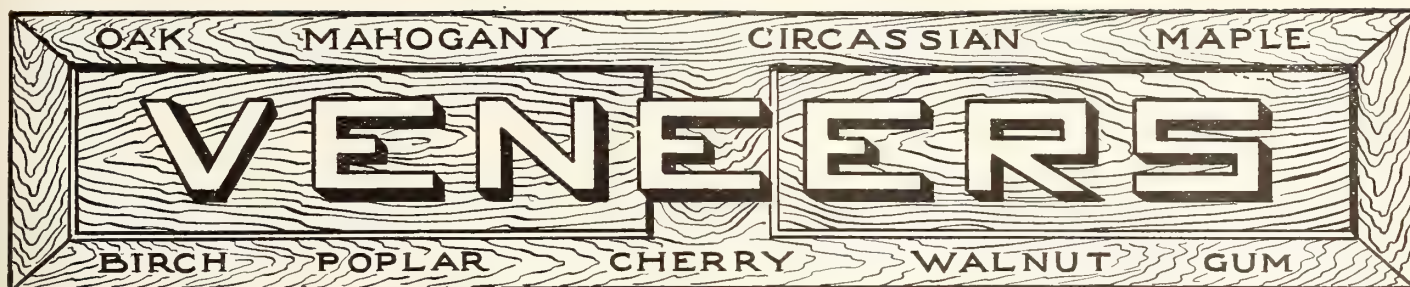
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machine and not to the floor; if attached to the floor, a connection should be used which will hold it firmly in place, and which at the same time will permit convenient removal when necessary.

4.—The parts guarded must be easily accessible for oiling, inspection and repair. The door or removable section provided for this purpose should be hinged or otherwise attached to the remainder of the guard or to the machine. If not, it is likely to be left off permanently.

5.—The guard should not interfere with cleaning and sweeping around the machine. It should, therefore, be kept generally about 6-in. above the floor.

6.—The guard should be strong enough to resist injury and keep its shape. A light, flimsy guard soon becomes bent and is discarded. A substantial guard is cheaper in the end.

7.—Incombustible guards are preferred. Wooden guards, soaked with oil, may become a serious fire hazard. Metal guards are neater and wear much better. As one has aptly remarked, "Metal guards look as if you wanted to; wooden guards look as if you had to." Guards may be made of cast iron, sheet metal, wire mesh, expanded or perforated metal or slate.

8.—Wherever possible it is desirable to interlock the guard with the operating mechanism, so the machine cannot be operated unless the guard is in place.

The employer should insist upon having all safeguards in his plant designed and constructed according to standard requirements. His men will then be assured of the highest degree of protection, and he will, in all probability, be able to secure a lower rate of insurance.

In addition to the machine hazards, which are common to all industries, every veneer plant has certain hazards which are peculiar to itself. The most conspicuous of these, and perhaps the most dangerous feature of veneer manufacturing, is the danger of workmen falling into the vats which are used for softening the logs by boiling. There are not many veneer plants in this country, which have been in operation for any length of time, that have not had at least one fatal accident caused by a workman falling into a vat. These vats should be guarded in the best possible manner. Each vat should have strong hinged covers, which should be kept closed whenever the workmen are not actually engaged in floating the logs or in taking them out. One of the most common methods of guarding these vats is to provide a railing along the edge where the men have to work when they are removing the logs. Owing to the fact that the logs have to be lifted over this rail, it is usually not built high enough to afford adequate protection. Such guards must be made strong, for workmen will use them to brace their feet, and the railing is also liable to be hit by the logs which are being swung out of the vats.

An improvement upon this type of vat is a device which is built in the vat itself just above the water level. This device consists of a series of horizontal bars 12-in. apart over the top, secured to an iron pipe at the back and free at the front ends. In raising logs from the vats as many bars as necessary raise with the log. When the log is removed, the bars drop back into place. Each bar raises separately and drops by gravity into its individual socket. If a man should accidentally slip and fall into the vat, these bars would save him from being submerged in the boiling water.

In some plants, men who are required to work about these vats are provided with a safety belt, which is connected to an overhead cable. Most workmen dislike this safety belt because it limits their freedom of movement. This simple device has been found to be effective whenever used, but the difficulty lies in getting the men to use it.

Some of the veneer plants which have been built during recent years have attempted to solve this problem by building the sides of the vats up above the ground or floor level. The difficulty here, however, is that there is a conflict between what is required for safety and what is required for convenience in operation. The higher the rail guards are built and the higher the sides of the vats are extended, say up to 3½-ft., the greater the protection to the workmen; but the higher the guards are built, the more work is involved in removing the logs, as these always have to be lifted over the rail. Perhaps the solution lies in adopting a happy medium as to the height of the vat inclosure and in installing traveling cranes or some other type of hoisting equipment to handle the logs.

Vats which are used in the steaming process should be guarded also. While a workman does not run much chance of being scalded, as the steam is turned off before the vat is opened, he may get a bad fall and possibly some other injury. Sometimes the drain becomes clogged and condensation causes a few inches of water to accumulate at the bottom of the vat. Drains should be arranged, if possible, so that they can be cleaned from the outside. Where steaming boxes are used and the doors slide up and down, frequent inspections should be made of the cables and counterweights to avoid accidents due to the unexpected falling of these heavy doors.

One of the most hazardous machines to be found in this industry is the veneer clipper. The point of operation of this machine is most frequently left unguarded, and for this reason it is responsible for the loss of so many fingers and hands. This machine is dangerous both to the operator and to the man working on the off-bearing side. Guards can be attached on both sides of the knife so as to minimize the risk of getting the hands or fingers caught under the blade. The guards which are usually applied to this machine consist of a series of prongs made of wire or wood 1½-in apart and brought down as close as possible to the table, both in front and back of the knife. Sometimes a pivoted leaf of wire mesh is attached to the machine in such a way that only a pile of known thicknesses can be placed under the knife blade, thereby preventing the accidental admission of the operator's hands and fingers. Sometimes these guards are made to swing away from the knife as the machine takes its stroke.

Most veneer clippers are set in motion by means of a foot treadle. This is inherently dangerous, just as in the case of the punch press, because the operator may fail to co-ordinate properly the movements of hands and foot and may trip the machine before his hands are removed from the danger point. In clearing away scraps of material, or in making some adjustment which may necessitate placing his hands underneath the knife, his foot may accidentally strike the foot treadle and set the machine in motion. Many manufacturers have succeeded in eliminating this danger by removing the foot treadle altogether and by attaching a hand lever to operate the trip. If the foot

(Continued on page 70)



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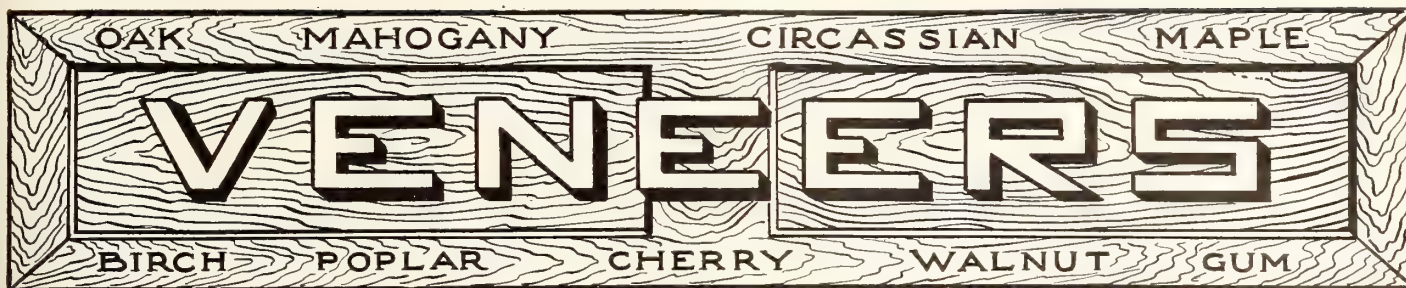
HERE are plain reasons why it will pay you to consult us always when in need of birds-eye maple, plain maple or rotary cut birch veneers. Not only do we limit our manufacture to the highest grade of product but we strive toward a constant co-operation with our customers so that the merit of BeVeCo veneers, through our efficient, prompt and courteous handling of customers' orders, will contribute to the fullest extent in helping each customer build up his own reputation for goods of merit.

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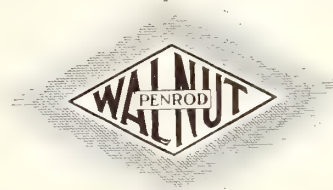
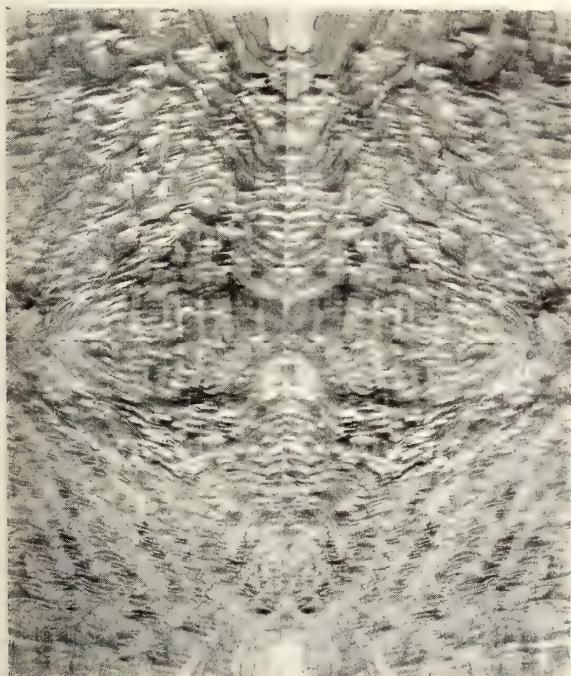
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5/4"	35,000	2,300	2,500	10,000	25,000
6/4"	28,000	4,800	7,500	14,500	22,500
8/4"	21,500	1,500	16,600	23,200	42,500

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treadle is not removed, it is always advisable to equip the machine with a device by means of which it may be locked or blocked when adjustments are being made.

There are a number of other machines frequently used in the veneer plants and which are also used in other wood-working industries. These are rip saws, cut-off saws, swing saws, equalizing saws, jointers, sanders, edgers, matchers and others. These machines should be guarded in veneer factories just as in other wood-working plants. Attention to the physical conditions of the plant should not be confined to the safeguarding of machines or the protection of veneer vats, but it should also include such subjects as lighting, heating and ventilation, safety of the electrical equipment, and conditions in the yard. Accidents are frequently caused by bad lighting, whereas good lighting is known not only to decrease accidents, but also to increase production anywhere from 2 to 20 per cent. Illumination has much to do with the mental and physical condition of the worker, which, in turn, determines the quantity and quality of his output.

Can You Sand Veneered Stock?

By An Expert Mechanic

The planer is not always to blame when difficulty is experienced in sanding veneered stock. The cores may have been surfaced as smoothly and evenly as possible, yet if the face veneers are cut through when sanding the blame is usually laid on the planing.

The sander itself is capable of doing a lot of harm if not kept in first-class condition. First-class condition means more that running nicely with the bearings taken up and the drums properly adjusted. What about the felt on the drums. Very little attention is given to this important item. Sometimes slivers or other pieces become wedged in front of the drums and form grooves in the felt. These grooves and high ridges are the cause of a considerable amount of faulty sanding. While this condition might not be noticeable when sanding ordinary material if built up stock, with their face veneers were run through it is quite likely that trouble would result.

The felts should be examined and tested with a straight edge from time to time and if found to be in poor condition should be replaced. No matter how well the machine may be running or how finely it may be adjusted, if the felts are in poor shape it cannot turn out first-class work.

Some seem to think that the sandpaper will make up for any unevenness in the felts, but this is not so. As the work passes through the paper is forced hard against the drums and the surface of the stock is, practically, moulded to fit the shape of the felts.

It is when every machine is turning out the highest possible grade of work that trouble is reduced to a negligible quantity, production increases and the work goes through the factory in a steady, even flow and with few interruptions.

Watch the planer knives to see that the cutting edge is straight and in proper alignment and the sander to see that the felts are true and properly adjusted, and see if the number of panels spoiled in sanding does not materially decrease.

Have you realized that before you buy a lathe you should know what you want to turn on it, and thus obtain the automatic additions to the lathe, so you can save labor and time?

Large Woodworking Firm Re-organizes

The oldest son of the late Alfred McDonald, lumberman of Peterboro, Ont., is J. R. McDonald, who for a number of years has taken an active interest in the business and will continue to carry on the business. The estate of Alfred McDonald has now been wound up and the business handed over to his family, consisting of Mrs. McDonald and three sons, J. R., A. D. and C. McDonald. The firm will be known



J. R. McDonald, Peterboro, Ont.

in the future as the Alfred McDonald Lumber Co., and its business policy will be along the same modern lines as in the past. The plant consists of a sawmill, shingle mill, planing mill, box factory and sash and door factory. The sawmill is not operating this summer as it was considered advisable last fall, in view of labor conditions, etc., not to go into the bush. The company are, however, putting in several camps this year, and will bring out a considerable cut of red pine, white pine, hemlock and cedar. Mr. McDonald reports that Peterboro anticipates a very active building season next year and the winter activities of the firm will be along the line of preparing for the rush in 1920.

New England Box Manufacturers Meet

The Eastern Shook and Wooden Box Manufacturers' Association held their semi-annual meeting in Boston recently. Many interesting addresses were given. The secretary, Mr. H. L. Pease, devoted considerable time, in his address, to the necessity and value of a uniform method of cost accounting for the Eastern box manufacturers. There were about 65 members in attendance.

Whitney Employees Enjoy Outing

Baxter D. Whitney & Son, Inc., Winchendon, Mass., manufacturers of wood-working machinery, held their first annual out and field day recently, on the birthday of the late Baxter D. Whitney, founder of the plant. Dinner was served to 850 employees with their families and friends. Part of the day was devoted to athletic games, such as swimming races, canoe races, baseball and other sports.



Receiving Your Order

—is not a mere matter of more business with us. To us it means another chance to prove the strength of our statements regarding our service. Your order will receive prompt and careful attention both in selection of stock and shipping to its destination. Whether your order is sent by mail, wire, telephone or your own personal visit you are assured of the same reliable service.

Let us know your needs for Veneers, Mahogany, American Black Walnut, Quartered Oak, Figured Quartered Gum and plain woods. Your satisfaction is assured.

Toronto Veneer Company

1100-1104 Queen St. West.

Toronto, Ontario

WALNUT and Quartered White Oak VENEERS

AND LUMBER

Prompt delivery

LONG-KNIGHT LUMBER COMPANY

INDIANAPOLIS, IND.



The Lumber Market

Domestic Woods

General conditions regarding the local hardwood situation are much the same as those referred to in the last edition of the "Canadian Woodworker." There is great scarcity of thick birch and thick elm. Buyers from the other side of the line have been scouring the country for 1½-in. birch and 2½ and 3-in. elm, all of which is used largely in automobile construction. Hardwood flooring manufacturers have been very busy and have used up a lot of 1-in. birch in No. 1 and No. 2 common. Owing to the scarcity of hardwoods a number of woodworking plants are employing basswood and soft elm for moulding stock, etc. The high price of gum has also caused a number of industries to turn to other woods.

One dealer stated recently that so far as birch was concerned he could sell 5,000,000 ft. or more of 2 in. and thicker within 24 hours if he could get the stock. Wholesalers report that automobile concerns are calling for more and more hardwoods and will speed up production for next year as every industry in this line is running behind in the number of its orders. Furniture factories are also very active, while the constantly increasing number of phonograph plants is calling for a large quantity of oak, birch and mahogany. Hardwood flooring factories have had the best year in their history owing to the building boom which has been going on in many centres. A large amount of chestnut has been used for interior house trim, particularly in Toronto. This has been resorted to owing to the scarcity and high price of southern pine. Many of the Ontario lumber operators will send a larger number to the bush this season to carry on logging and, although production costs will be higher than in 1917-18 there should be some relief in the situation next spring. Dry stocks of hardwood are at a premium and, in many cases, the supply does not begin to equal the demand.

Imported Woods

The general tone of the American hardwood market is good, a strong range of prices prevailing. There is still difficulty in getting stock in many quarters. About the scarcest woods are quartered oak and ash. Reports from the various hardwood centres indicate that there has been very little, if any, slackening up in trade. The demand for all varieties and grades is steady, and there is little disposition to cut prices to force trade because of insistent requisitions. Factories making boxes, furniture and implements are all good buyers, while woodworking concerns are constantly in the market. Gum has been moving briskly and the highest prices ever known have been realized. Poplar, maple, elm, and sycamore are all strong. In some centres wholesalers who have had no dry oak for several weeks have been investing freely in green stocks. The demand has kept up at a pace fully capable of taking care of any expansion in production, and there is in the future the prospect of a very large volume of buying for railway consumption.

It is said that the hardwood mills are, as a whole, coming up pretty well to shipments, but the condi-

tions still remain as before, so far as stocks in hand are concerned. It will be a long time yet before producers catch up with orders. One leading authority states that when that condition arrives there will still remain many months before anything approaching normal stocks on hand may be expected.

There has been some falling off in the export demand for hardwoods and there may, possibly, be some disarrangement until the foreign exchange situation is cleared up. Buyers are desirous of lumber, but do not want to pay the extra amount required in order to get it. On the whole, considering the car and labor situation the hardwood outlook is satisfactory from a price, productive and distribution standpoint.

Uniformity in Hardwood Inspection Rules

The differences that have hitherto existed in the hardwood trade have been settled and the adoption of the inspection rules of the National Hardwood Lumber Association by the rules committee of the American Hardwood Manufacturers' Association marks the last step needed to unite the two bodies on the question of inspection and grading.

With two sets of rules in existence for many years, it was but natural that the evolution of the rules should be along lines that would ultimately converge. That this was true was shown by the rules adopted by the American Hardwood Manufacturers' Association early in the year. These were so similar to the rules of the National Hardwood Lumber Association that they could have been considered identical. It was soon realized that the uniform inspection of hardwood lumber had arrived and that it was only necessary to carry out certain formalities to reach the desired goal. In June the directors of the National Hardwood Lumber Association waived the copyright privileges in order that their rules might be adopted by the other body and in July the American Hardwood Manufacturers' Association decided to adopt the National rules, effective Sept. 1st. From now on there will be close co-operation between the two bodies.

The National Hardwood Lumber Association will continue to be the rule making body and will operate its inspection bureau under the bonded certificate plan. The American Hardwood Manufacturers' Association will continue its activities in the interests of its members and will maintain its inspection department, which will confine its services to arbitration on lumber in dispute and this service will be rendered only when the consent of the shipper and consignee have been obtained.

The American Hardwood Manufacturers Association have adopted the inspection rules of the Southern Cypress Association on cypress and tupelo, therefore, the rules of the National Hardwood Lumber Association covering cypress, random widths and the rules of the Southern Cypress Association covering cypress on stock widths will both be available and either rule may be used, at the option of the shipper.

The American Hardwood Manufacturers' Association have adopted the rules of the Commercial Rotary Gum Association on commercial rotary cut veneer, the rules of the Rotary Cut Box Lumber Association on rotary cut box lumber, the rules of the Southern Pine Association on yellow pine, the rules of the Maple Flooring Manufacturers' Association and the Oak Flooring Manufacturers' Association of America on maple and oak flooring.



**Where N. B. Quality
Proves Itself**



**WRITE FOR SAMPLES
AND PRICES**

Concentrate Your Purchases and Save Money

Through Buying

Sliced Figured Red Gum, and Rotary Cut Gum Veneer.
Sawed and Sliced Ash, Poplar and Gum Grand Piano Rims.
Sawed and Sliced Quartered Oak.

In Cars with Band Sawed Hard Wood Lumber

Carload buyers get closer prices, save freight on local shipments, and eliminate damaged goods.

NICKEY BROTHERS, INC.

MEMPHIS, TENNESSEE

THE proverbial richness of bank furnishing is not over-emphasized, but rather is it tastefully tempered through the use of Figured Red Gum Veneer, as shown in the above picture.

When the panels thus used are made of N. B. Quality Figured Gum Veneer the most charming effects can always be depended upon, not only for beauty, but also for the symmetrical matching so desirable in this class of veneer.

As large areas like this give excellent opportunity for the demonstration of veneer quality, it follows that in just such places N. B. Quality Veneer best proves itself.

News of the Trade

The Queen Mattress Co. has been registered at Toronto.

The Montreal Spring Bed Co. was recently registered in Montreal.

The Beach Furniture Co., Limited, Cornwall, Ont., are building a new kiln.

The company known as the Luclair Shipbuilding Co., Sorel, P. Q., was dissolved recently.

The Bell Piano & Organ Co., Limited, of Guelph, Ont., are installing a new three drum Yates sander.

The Gibbard Furniture Co., Limited, Napanee, Ont., are installing a "Sidman" lumber curing dry kiln.

H. A. Wickett, Front and George Sts., Toronto, is in the market for the interior wood trim for 34 houses.

The Simonds Canada Saw Co., Limited, Montreal, P. Q., are building one storey addition to their drafting room.

The Hardware & Furniture Supply Co., Limited, Creston, B. C., has been incorporated with a capital of \$25,000.

The Hamilton Church Organ Works, Hamilton, Ont., are now manufacturing a complete line of phonograph cabinets.

Harry Alexander, Limited, Toronto, Ont., has been incorporated to carry on the business of woodworkers. Capital \$10,000.

The T. Eaton Co., Toronto, have purchased a Mattison portable electric varnish machine for their case factory on Dupont St.

Meakins & Sons, Hamilton, Ont., manufacturers of brushes and woodenware, are making a two-storey addition to their plant.

J. M. A. Lefebvre, Brantford, Ont., has commenced work on a mattress factory. Building to be 30 ft. by 38 ft. and of brick construction.

A shipbuilding yard is about to be opened at Port Alberni, Vancouver Island. A free site has been offered by the E. & N. Railway Company.

The plant of the Bishopric Wall Board Co., Limited, Ottawa, Ont., was almost completely destroyed by fire. Loss estimated at \$300,000.

Mustiko, Limited, Toronto, Ont., have been incorporated to manufacture and deal in automobiles and automobile accessories. Capital \$250,000.

The Glo Products, Limited, Toronto, Ont., have been incorporated to manufacture and deal in polishes for wood, metal and leather. Capital \$100,000.

Mr. Svenson, Telkwa, B. C., has installed a few machines in his carpenter shop. The new equipment includes a planer, combination saw and a boring machine.

Bennett & Wright have opened up a pattern shop on Royce Ave., Toronto, and have installed a pattern maker's lathe and a few other woodworking machines.

Mead Universal Co., Limited, Toronto, has been incorporated to manufacture and deal in automobiles, trucks, carriages and other vehicles. Capital \$350,000.

The Weber Piano Co., Limited, Kingston, Ont., have recently increased the efficiency of their plant by installing a C.M.C. No. 611 straight edging and jointing saw.

The McLeod Hawthorne Co., Limited, Montreal, P. Q., have been incorporated to manufacture and deal in trunks, and other travellers requisites. Capital \$20,000.

A. Lafrance, 707 Lafontaine St., Montreal, contemplates erecting a factory for the manufacture of furniture. Work will be commenced within the next week or two.

Eureka Pattern Mfg. Co., Limited, Toronto, has been incorporated to do business as pattern-makers and to carry on woodworking in all its branches. Capital \$40,000.

Several carloads of B. C. fir have been purchased for Messrs. Beatty Bros., of Fergus, Ont., in the coast province. This will be used in the making of ladders by that firm.

Damage amounting to \$15,000 was done to the plant of the Kennedy Sash and Door Factory, Vancouver, B. C. The fire started in the plant of the Dust Control Co., Front St.,

completely gutting that building before spreading to the Kennedy factory. These plants are located near the big Coughlan shipyards, leading many to think that the shipyards were in fire.

The saw and planing mill at Gillies Lake belonging to Walter Wardrop, Dyers Bay, Ont., was completely destroyed by fire. Mr. Wardrop intends to build and equip a new mill.

A contract has been awarded to the Cholburg Shipyard Co., Victoria, B. C., by the Universal Shipping & Trading Co., Seattle, Wash., for four vessels. Amount involved \$600,000.

The Thompson Furniture Co., Limited, Belleville, Ont., manufacturers and retailers of furniture, have disposed of the undertaking business which they conducted in conjunction with the above business.

Wilder's Bleury Street Building Co., Montreal, were recently incorporated. Among the powers granted this company were to manufacture and deal in building material of all kinds. Capital \$149,000.

By order of the Court, the assets of Mr. Paul Demers, sash & door manufacturer, Montreal, are to be sold by auction. These comprise the sash and door factory and a large amount of real estate in Montreal.

The Georgetown Spruce & Cedar Co., Limited, Georgetown, B. C., have been incorporated to take over the business and assets of the Georgetown Spruce Co. and to continue a general lumber and manufacturing business.

The Roxton Baby Carriage Co., Limited, Roxton Falls, P. Q., have been incorporated to manufacture and deal in baby carriages and other vehicles for children and wooden, straw and rattan goods. Capital \$19,000.

The wooden steamship "Ontario" averaged 12 knots an hour on a trial trip recently at Victoria. This beats the contract speed and the trials have proved satisfactory to the French government who own the vessel.

The cooperage plant of the Smith Lumber Co., Limited, Woodstock, N. B., is about to commence operations. A carload of hoops is being brought in from Indiana and 10,000 potato barrels will be rushed to completion.

Legare Automobiles of Cowansville, Limited, Cowansville, P. Q., have been incorporated to manufacture and deal in automobiles, motor trucks, vehicles of all kinds, furniture, woodenware and musical instruments. Capital \$100,000.

Legare Automobiles of Sherbrooke, Limited, Sherbrooke, P. Q., have been incorporated to manufacture and deal in automobiles, motor trucks, vehicles of all kinds, furniture, woodenware and musical instruments. Capital \$100,000.

T. H. Hancock, Toronto, manufacturer of sash, doors, interior fittings, etc., recently purchased a portable Kelley router. This machine can be put to a wide variety of uses and will be used on some large contracts for interior fittings.

Notre Dame Lumber Co., Limited, Notre Dame du lac, P. Q., have been incorporated to manufacture and deal in lumber, wood, and all wood products. Capital \$100,000. F. G. Quincey, Notre Dame du lac, is one of the incorporators.

The Harbor Commissioner of Montreal have recently received tenders for timber for the construction of crib work. The quantity supplied will include crib work, constructing timber, shipbuilding timber, B. C. timber, and railway ties.

Scarfe & Co., Limited, varnish manufacturers, Brantford, Ont., were recently incorporated with a capital of \$500,000. It is the intention of the company to proceed with the erection of a big extension. Plans have been drawn and tenders are being called for.

The Pratte Pianos Co., of Montreal, Limited, Montreal, P. Q., have been incorporated to manufacture and deal in pianos, organs, phonographs and other musical instruments. Capital \$200,000. P. A. Pratte, manufacturer of pianos, is one of the incorporators.

The housing problem, which is one of the most difficult with which Britain has to deal, is now being tackled by the government in earnest. Tenders have been called for the erection of 3,200 houses in London, costing in the aggregate of £2,300,000 sterling.

The Seamen, Eaton Flooring Co., Limited, Toronto, Ont., have been incorporated to manufacture and deal in lumber, hardwood products and builders' supplies. Capital \$40,000. The provisional directors are W. B. Seaman, M. H. Eaton, J.

The Wage Question --it is the Biggest Problem you have to face to-day.

You can face it with absolute confidence that you are getting all the time you pay for if you are equipped with International Time and Job Recorders.

The difference between the time you pay for and the time you get is a mighty important factor for any manufacturer. In a good many cases where no reliable system of time recording is used this difference, reduced to dollars and cents, represents staggering figures. In some cases it is the cause of a loss showing at the end of the year instead of a profit.

There is an International Time and Job Recorder that will fit into your organization as you would dovetail two pieces of wood together. The recorder itself is the whole system. It can be installed at night and the men go to work by it next morning, with practically no trouble. And remember this—the record of an International is indisputable; it protects you and the workman alike.

You want to be shown, don't you? We want to show you. Let's get together on it.

International Business Machines

Company, Limited

Royce & Campbell Avenues, Toronto, Ont.

FRANK E. MUTTON, Vice-President and General Manager

Also Manufacturers of

Dayton Automatic Scales and Hollerith Electric Tabulators

BRANCH OFFICES: MONTREAL, VANCOUVER AND WINNIPEG

Seaman, A. Seaman and S. J. Arnott. They have opened up an office at 48 Abel St. and are in a position to furnish hardwood flooring in any quantities.

Brockville Paper Mfg. Co., Limited, Brockville, have been incorporated to manufacture and deal in paper, pulp, pulpwood, lumber and wood products. S. M. Clarke and H. Fisher, barristers at law, Brockville, are two of the incorporators. Capital \$250,000.

J. P. Abel, Fortin, Limitee, Montreal, have been incorporated to take over and carry on as a going concern the business now conducted in Montreal under the name of J. P. Abel, Fortin & Cie, box manufacturers and lumber merchants. Capital stock \$200,000.

The Winnipeg employees of the Sherwin-Williams Company, Canada Paint Company and the Senour Paint Company held a very enjoyable picnic. W. F. Fallis, managing director of the Sherwin-Williams Company, was present and addressed the assembled employees.

Batts, Limited, Toronto, Ont., manufacturers of sash, doors, interior trim, etc., are putting in a Kelly portable router. This machine works to wood or iron patterns and is used for stair work, church pew ends, column and pilaster fluting and all forms of cabinet work.

Shipbuilding is continuing active at various towns. In Parrsboro, N. S., W. R. Huntley & Son have laid the keel for a four masted 600 ton schooner and the Valley S. S. Co. have awarded a contract for a large schooner which will be built at Meteghan River, N. S.

Members of the Piano Action & Key Workers Union are negotiating for higher wages. Small increases have been offered by the employers but the sentiment is that these are not in proportion to the present cost of living. It is decided that an application will be made for a large increase.

A report from Spain states that the Spanish Cabinet has decided to grant an eight hour working day to the building trades throughout Spain. Wages will be fixed by committees of employers and workmen in each district. The Cabinet also approved a bill to insure workers against unemployment.

The International Bushings, Limited, Toronto, Ont., have been incorporated to manufacture and deal in articles composed of or manufactured in whole or part from iron, steel, metal, wood or other combination of materials. Capital \$25,000,000. R. P. Locke, barrister, Toronto, Ont., is one of the incorporators.

The Parker Creek Lumber Co., Montreal, P. Q. have been incorporated to own and operate saw mills, shingle mills, lath mills and pulp and paper mills and to carry on the business of lumber merchants and manufacturers. To manufacture and deal in wood of all kinds and all articles made of wood. Capital \$95,000.

The old Central Prison, Toronto, Ont., is being demolished by the Grand Trunk and Canadian Pacific Railways. The prison was built in 1873 and the railways will lay tracks where it now stands. The brick and stone work is being taken down, and the lumber which is in good condition although 46 years old, is being sold.

The beautiful upholstered chair that was presented to H. R. H. the Prince of Wales by H. Bywater, who conducts an upholstering shop at 611 Yonge St., Toronto, was on exhibit in the booth of the Soldiers' Civil Re-establishment. Mr. Bywater employs a number of returned men and is instructing them in the upholsterer's art.

The Sherlock-Manning Piano Co., London, Ont., state that in spite of the fact that their plant is running to capacity they are away behind with their orders and are unable to keep pace with the demand. For this reason they contemplate making an addition to their plant but at present they are not prepared to make any definite announcement.

The Handley-Page, Limited, Morrisburg, Ont., have been incorporated to manufacture, operate and deal in hydroplanes, aeroplanes and all forms of aircraft. Among the incorporators of the company are Wm. H. Workman and Mark Kerr (admiral) of London, England., Harry Clarke, of Montreal, Fred R. Chalmers and Wm. H. McGannon, of Morrisburg. Capital \$2,500,000.

The Curtiss Aeroplanes and Motors, Limited, Dufferin St., Toronto, are manufacturing a line of phonographs to be

known as the Curtiss Aeronola. They have a large modernly equipped plant and are turning out in the vicinity of 100 machines a day. It is their intention to increase this amount in the near future. The Curtiss Aeronola is one of the newest phonographs on the market and embodies the latest ideas in phonograph construction. None but the highest grade of materials is used and great care is taken to secure a fine finish. To use their own expression, their product is "the last word" in phonographs.

The woodworkers and carpenters of Owen Sound, Ont., are organizing a union to affiliate with the United Carpenters' and Joiners' Central Organization. A meeting has been held and the men have applied for a charter. It is expected that three or four hundred men will join this union, when it becomes fully organized and most of these will come from the local furniture factories.

Loomis, McFee, Henry & McDonald, Limited, Vancouver, B. C., have been granted a Dominion charter. Wide powers are granted, such as to carry on the business of general contractors, to manufacture and deal in timber, lumber, sash and doors, portable houses, boxes and all articles made of wood. Capital \$500,000. J. S. Pugh, barrister, Vancouver, is one of the incorporators.

A handsome four-master, Harry A. McLennan, was launched recently at Campbellton, N. B. at the McLennan ship yards. The name was given in honor of the eldest son of Mr. and Mrs. Alex McLennan who gave his life in the great war. The vessel is 186 ft. long, 35 ft. beam and net tonnage 719. It is nearly 60 years since a wooden vessel has been launched at Campbellton.

Ralph Higel, treasurer of the New York branch of the Otto Higel Co., Limited, Toronto, spent a few days in Toronto recently. Mr. Higel said that the New York plant is not as large as the Toronto one and at present has a yearly output of about 10,000 player actions. It is hoped that, with the addition of a number of labor-saving, automatic machines production will be increased to 50,000 actions per year.

The British American Paint Co., Victoria, B. C., is planning to extend its prairie business, according to an announcement by W. R. Herbert, general manager of the company. At present they supply the prairie trade from the main factory at Victoria. Within a year it is expected that the company will have a mixing plant in operation in Regina and distributing warehouses will be established in other middle western cities.

The Peaceland was recently launched at Annapolis Royal, N. S. being the smallest vessel built there in a number of years by the Annapolis Shipping Co. The Peaceland, however, is a pretty model and a handsome well built craft, her keel being 100 ft., beam 29 ft. and net tonnage 261. She has three masts and top masts complete. As soon as more timber can be accumulated another vessel of a larger type will be built.

Canadian Sander Mfg. Co., Limited, Brockville, Ont., have been incorporated to manufacture and deal in all kinds of machinery, builders and mill supplies, patterns, lumber and building material and to carry on the business of pattern makers, mill workers and machinists. Capital \$20,000. The incorporators are A. C. Jones and R. L. Carter, manufacturers, and J. A. Jones, machinist, all of Syracuse, N. Y., and J. H. Craig and F. V. Craig, contractors, Solvay, N. Y.

The cabinet makers, millmen and inside woodworkers' union of Toronto have drafted a new schedule which they will attempt to put into effect. This schedule calls for an eight-hour day, 44 hour week; time and a half for overtime; double time for Saturday afternoons, Sundays and legal holidays. Minimum wage of \$26.00 per week; no piece work or contract work; recognition of the union; a closed shop and a shop committee to be appointed by the men in each shop to meet the management and to adjust any grievances that may arise.

H. Mobbs, of Kittering, Eng., who is one of the largest manufacturers of wooden shoe lasts in the world, proposes to establish a large last factory at Mullin's Brook, N.B. It is anticipated that eventually furniture will form a goodly proportion of the product of the new plant. Hardwood will be secured from the limits of the Nashwaak Pulp and Paper Co., and a sawmill which has been purchased is being moved to the new location which is about four miles from McGivney Junction, N. B. It is expected that from 100 to 200 hands will be employed.

HARDWOOD LUMBER



General Offices - Greenwood, Miss., U.S.A.

Our Endeavor is to Make
This Brand Synonymous with Quality

*It is Your GUARANTEE—
Our Mutual PROTECTION*

***We want your BUSINESS, but your
GOOD WILL is more valuable and
we can't keep one without the other.***

Manufacturers Exclusively

BAND MILLS:

GREENWOOD, MISS.

MOORHEAD, MISS.

Personal Items

W. T. Mather, who carried on business as a carriage manufacturer at Mather's Corners, Ont., recently passed away.

Wm. Robertson, of Victoria, B. C., who is in charge of trade extension work in connection with the Forestry Branch, Department of Lands, is spending a few weeks in Toronto.

David Rutherford, a veteran carriage builder of Owen Sound, Ont., is retiring from active work. He has successfully conducted a carriage factory in Owen Sound since 1868.

E. E. Spencer passed away recently at Frelighsburg, P. Q. Mr. Spencer was a member of the firm of Spencer & Spencer, saw mill owners and manufacturers of wood products.

Major Brechin, B. C. Lumber Commissioner for the East, left a few days ago on a flying visit to the Coast. He expected to resume his duties in Toronto in the course of a few weeks.

A. E. Eckardt, of the R. Laidlaw Company who operate a large planing mill in Toronto, has returned to his desk after spending several weeks at Rosseau Lake, Muskoka, where he became an enthusiastic golf player.

Mr. H. A. Grimsdick, managing director of the Bell Piano & Organ Co., Limited, Guelph, Ont., recently returned from a successful business trip to the Pacific Coast. Mr. Grimsdick reports that he found business good both on the prairies and the coast.

W. J. Beattie and H. B. Beattie motored from Owen Sound to attend the Canadian National Exhibition at Toronto. Mr. Beattie and son are the authors of the interesting illustrated articles that have been appearing over their names in recent issues of this journal.

Joseph Chew recently passed away in Vancouver, B. C. Mr. Chew, who had conducted a shingle mill in Vancouver for the past 15 years, was born in Ontario 68 years ago and was at one time connected with the planing mill and lumber business around Midland and Georgia Bay.

We regret to report the death of C. R. Kennedy, Vancouver, B. C. Mr. Kennedy was vice-president and general manager of the A. R. Williams Machinery Co., of Vancouver,

Limited. He was of a genial and obliging disposition and will be missed by a large number of woodworkers and other friends.

Ex-Mayor Frank A. Kent, of Meaford, now of Toronto, who is general manager of the Seamen-Kent Co., Limited, recently took his initial trip in an aeroplane. The first aerial mail service out of Meaford occurred on August 20th when Mr. Kent left on a flight in company with an aviator who gave an exhibition of his skill in that town.

Frank F. Fish, secretary and treasurer of the National Hardwood Lumber Association, Chicago, has been on a visit to Montreal and Quebec, with a view of making arrangements for opening a branch of the Association in Montreal. It is proposed to open an office and to appoint an official bonded inspector on the same basis as in Toronto during the past six years. Mr. Fish, who also visited Toronto on his way to Montreal, was successful in securing additional members in Ontario and Quebec. The present membership in Canada numbers 39.

The death of Chas. S. Coryell occurred recently at his home in Toronto. Mr. Coryell was with the C. F. Adams Company, of Cincinnati, for a number of years and in 1881 was sent to Toronto to open their branch in that city. Under his capable and energetic management the business forged ahead rapidly. In 1896 when an opportunity offered to secure the business he formed the Adams Furniture Co., Limited and took over the Toronto branch. He is survived by his wife, four sons, Robert S., Frank A., Chas. F. and Warren R., and one daughter.

J. J. Elliott, of Elliott Woodworking Co., Limited, Toronto, has just returned from a very successful business trip to England. While there he formed a company known as the Dominion Machinery Co., of Halifax, England, to manufacture and handle his line of Combination Woodworkers. Mr. Elliott reports a strong demand for his machines in England stating that a week's demonstration in Liverpool resulted in fifty orders, while a week in Birmingham netted forty orders. The number of machines sold while away exceeded 150. Since his return he has put on a double shift in his plant and is running night and day thus increasing production from six to between fifteen and twenty. For the present the bulk of the European business will be supplied from the plant in Toronto.

Do You Take Advantage of all Discounts?

The manufacturer who takes the full time on all his invoices certainly pays a high price for the privilege. Probably higher than he realizes, as shown by the following table:

(1) One per cent. in 10 days in a 30 day bill means 18 per cent. per annum. Example: Invoice \$1,000, 30 days net, 1 per cent for cash in 10 days. If the merchant pays in 10 days he receives \$10 cash discount, which, in effect, is the interest the wholesale house pays him for the use of \$1,000 for the 20 days unexpired time. This is at the rate of 18 per cent per annum for the interest on \$1,000 for 20 days at 18 per cent. is \$10.

(2) Invoice \$1,000, terms 60 days net, 2 per cent. for cash in 10 days. Discount \$20, unexpired time 50 days, interest equivalent 14 4/10 per cent per annum.

(3) Invoice \$1,000, terms 6 months net, 6 per cent for cash in 30 days. Discount \$60, unexpired time 5 months, interest equivalent 14 4/10 per cent. per annum.

(4) Invoice \$1,000, terms 4 months net, 4 per cent. for cash in 30 days. Discount \$40, unexpired time 3 months, interest equivalent 16 per cent. per annum.

(5) Invoice \$1,000, terms 6 months net, 6 per cent. for cash in 60 days. Discount \$60, unexpired time 4 months, interest equivalent 18 per cent. per annum.

The above few examples will show what a heavy

disadvantage a business man is under when he takes full time on his bills. He could borrow money to discount his purchases and make 6 per cent. to 10 per cent. on the transaction besides keeping his business in hand better than he possibly can when he owes a large number of accounts.

Doings of the Woodworking Industry

Reports emanating from the different manufacturing centres indicate that in the Maritime Provinces the woodworking industry is very prosperous and, with few exceptions, the plants are running to capacity. The woodworking plants at Westville, N.S., and the box factories at St. John, N. B., being the exceptions. In the province of Quebec conditions, as a whole, are good. At Montreal and Quebec City trade is brisk, including the broom factories in the latter city. The rest of the province reports business active. Coming to Ontario the same holds true, most of the woodworking centres report exceptionally good business and a shortage of skilled workmen. The various furniture and piano factories are working to capacity. The box factories in the Ottawa district find things quiet, while the broom and piano factories at Kingston report a slow demand. From Ontario right through to the coast the different planing mills, sash and door factories, etc., are experiencing a strong demand for their products.

For Economy and Utility

SERVICE to the buyer has never been a meaningless phrase with us. Rather it truly expresses the policy responsible for the consistent growth of this company in its thirty-three years of existence—the policy to learn as we grow and let the buyer share in the benefits coming from what we learn. That is why we now recommend to careful buyers in kitchen cabinet furniture and similar fields that they—

Use ^{4x4}
inch

F. A. S. Cottonwood

6 inches
12 inches **Wide**

Our cottonwood is strictly of the yellow variety and is an exceedingly desirable and useful wood. This lumber is dry and flat and straight—ideally suited to many uses requiring such qualities in a smooth, easy-working wood. At the same time the trend of the hardwood market makes possible a considerable saving right now through the use of cottonwood.

ANDERSON-TULLY CO.

MEMPHIS



TENNESSEE

We cut on Five Mills 70,000,000

Feet a Year of Southern Hardwoods

Mutual Insurance Proves Success

One of the outstanding features of the convention of the Southern Retail Furniture Association, which was recently held at Charlotte, N.C., was the annual meeting of the Southern Mutual Furniture Fire Insurance Co., an auxiliary of the Furniture Association.

Secretary John A. Gilmore made a report of constantly increasing business. The members now receive an annual dividend of about twenty per cent. The report was so satisfactory that within fifteen minutes after it was read new insurance to the amount of \$150,000 was written.

The Hon. Fitz Hugh McMaster, formerly insurance commissioner for South Carolina delivered an address on mutual insurance companies, giving facts and figures convincing to the business man as to where his best interests lie.

Canadian Automotive Industry

It is expected that the Canadian automotive industry will benefit largely from the 6½ per cent. preferential tariff which has recently been put into effect by Great Britain in order to develop the export business of Canada.

There is now one motor vehicle in Ontario for every thirty-nine of the population. The number of cars throughout the Dominion has increased rapidly, agricultural states rather than manufacturing states containing the greater number of cars. The recent industrial census of Canada shows eleven manufacturers of automobiles and twenty-four manufacturers of ac-

cessories, representing a total capitalization of a little less than \$32,000,000.

Since this report, the development of the motor industry in Canada has progressed rapidly in many localities. Plans for expansion in the automotive field about Windsor alone call for an investment of \$12,000,000 in the immediate future.

Opening for School Desk Factory in B. C.

Chairman Hugh, at a recent meeting of the Surrey school board, pointed out that all school desks and supplies of a like nature for the B. C. schools were being imported from Eastern Canada and from the United States. He drew attention to the fact that B. C. abounds in raw material and thought that if the matter were given publicity some enterprising firm would open a factory on the Pacific Coast for the manufacture of school desks and kindred lines.

Eighty Housing By-laws Passed

J. A. Ellis, director of municipal affairs for the Ontario Government, reports that eighty municipalities have passed by-laws under the Ontario Housing Act, providing for appropriations ranging from \$20,000 to \$1,000,000. Windsor provides the largest amount. Ottawa purchased land known as Lindenlea for \$60,000, which was divided into 160 lots. These lots were rapidly picked up when they became available and there are only 10 or 15 lots left. The Reid property has also been purchased by the Ottawa Housing Commission for \$50,000.

A Few New and Refitted Woodworking Machines

from our large stock of up-to-date machinery. Write us for prices and information on any machines not listed that you may require.

CHAIN MORTISERS

Stock No. 44911—Used M-256 Cowan Chain Mortiser with 5/16 in. bar chain and sprocket. No sharpener.
Stock No. 44566—Practically new M-255 Cowan Chain Mortiser with 5/16 in. chain, bar and sprocket with 1¾ in. sprocket extra.
Stock No. 44568—Practically new M-255 Cowan Chain Mortiser with ¾ in. chain bar and sprocket and 5/16 in. chain bar and sprocket.
Stock No. 44567—Practically new M-255 Cowan Chain Mortiser with ¾ in. chain bar and sprocket and 5/16 in. chain bar and sprocket.

SINGLE SURFACE PLANERS

Stock No. 32959—New 24 x 7 Eclipse Single Surface Planer, top and bottom rolls driven. Feed rolls are 3½ in. diameter, 13½ in. apart.
Stock No. 31317—New Preston 26 x 10 Single Surface Planer with divided rolls. Feed rolls are 16 in. apart.
Stock No. 31318—As above.
Stock No. 44620—Used 24 x 7 Eclipse Planer, Matcher and Moulder, will match 12 in. wide.
Stock No.—Used 24 x 7 Eclipse Single Surface Planer.
Stock No. 33111—New 24 x 7 Clark & Demill Single Surface Planer, cylinder driven at both ends. Feed rolls 4½ in. dia., 19 in. apart, all driven.
Stock No. 29278—Used 30 x 8 McGregor-

Gourlay Single Surface Planer, with divided rolls and chip breaker. Cylinder is driven at both ends. Feed rolls 6 in. dia., 17 in. apart. This is a good heavy type cabinet planer.

Stock No. 31758—Used 24 x 6 Whitney Single Surface Planer, cylinder driven at both ends. Feed rolls 4¾ in. dia., 12½ in. apart, all driven.

Stock No. 44913—Used 28 x 6 Whitney type Single Surface Planer, cylinder driven at both ends. Rolls 4¾ in. dia., 13 in. apart, all driven.

Stock No. 44846—Second-hand McGregor-Gourlay 24 x 7 Pony Planer, top rolls only are driven. Rolls are 3 in. dia., 13 in. apart. Machine is now manufactured by the C. M. C. Bottom rolls 5 in. dia., and machine will feed 25 ft. per minute. Tight and loose pulleys are 8½ in. x 4½ in., run 1000 r.p.m.

CUT OFF SAWS

Stock No. 42306—Used Greenlee Automatic Cut-Off Saw, travelling saw carriage operated by foot lever and friction, 36 in. dia. saw, cuts 13½ in. above table.

Stock No. 44798—Used McGregor-Gourlay Dimension Rip and Cross Cut Saw Table. Will carry 18 in. saws, ripping 13 in. wide, with rip and cross cut fences, raising and lowering arbor; tilting table 48 in. x 36 in.

Stock No. 42782—New Beach Iron Frame Rip Saw with wooden table, raising and lowering mandrel.

Stock No. 42795-41—New No. 125 Preston Variety Tilting Saw Table.

Stock No. 44733—New No. 127 Preston Variety Tilting Saw Table.

Stock No. 42826—New No. 4 Dodds Variety Tilting Saw Table.

Stock No. 42784—New No. 6 Dodds Variety Tilting Saw Table.

Stock No. 44685—American Lightning Cut-off Saw. Machine is self contained. Size of table 26 x 31½ in.

SASH AND DOOR RELISHERS

Stock No. 44529—M-225 Cowan Sash & Door Relisher and Mortiser.

Stock No. 40964—Jackson Cochrane Door Relisher.

Stock No. 40968—M-234 Cowan Sash Relisher and Mortiser.

BAND SAWS

Stock No. 44627—Used Genuine Westside 36 in. Band Saw, with tilting table, good up-to-date machine; first class condition.

Stock No. 45590—New 36 in. Preston Band Saw with wire guard on top wheel, iron enclosing doors on bottom wheel.

Stock No. 44653—Used 36 in. Preston Band Saw with wire guard on top wheel and iron enclosing doors on bottom wheel arranged for motor drive.

Stock No. 44913—Used 36 in. Defiance Band Saw with re-sawing attachment, will carry 1½ in. saw.

The A. R. Williams Machinery Co., Limited
TORONTO, CANADA

Mississippi Delta

Gum

Quartered and Plain
Red and Sap

Oak

Quartered and Plain
Red and White

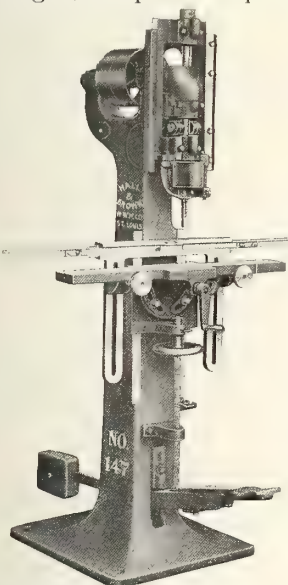


The
KORN-CONKLING Co.
CINCINNATI, OHIO

Mills; Percy, Mississippi

No. 147 For Good Mortising

Use a mortiser that makes cuts of any size, length, shape or depth within its capacity, and



leaves the sides and corners clean and true, bottom square and edges sharp, requiring no hand-finishing.

No. 147 is a vertical, hollow chisel, foot lever feed machine for general use in both hardwood and soft. Takes chisels up to $\frac{3}{4}$ inch square and mortises up to $3\frac{1}{2}$ inches deep, exact depth being adjustable at will. Either belt or motor belt drive. Plain or compound table.

It's a machine that merits investigation. Write for complete description.

Hall & Brown Wood Working Machine Co.
Home Office and Factory, 1913 to 1933 N. Broadway
SAINT LOUIS, U.S.A.

"WELL BOUGHT IS HALF SOLD"

Hardwood Handlers Heed!

We Offer

45 M' 4/4"	No. 3	Com. and Btr.	Basswood
27 M' 4/4"	No. 3	" "	Beech
3 M' 6/4"	No. 2	" "	"
14 M' 8/4"	No. 2	" "	"
8 M' 4/4"	No. 3	" "	Soft Elm
2 M' 6/4"	No. 2	" "	" "
27 M' 8/4"	No. 1	" "	Hard Maple
55 M' 12/4"	No. 1	" "	" "
50 M' 4/4"	No. 3	" "	Birch

All Dry Stock

Canadian General Lumber Company, Limited

712 Bank of Hamilton Bldg.

TORONTO

MONTREAL OFFICE: 203 McGill Bldg.

Selling

Graves, Bigwood & Co.'s
Lumber, Lath and Box Shooks

FOR SALE

One Baxter D. Whitney Surface Planer, 42 in., \$300.00.

J. H. CONNOR & SON, LIMITED,
9-11 Ottawa, Ont.

FOR SALE

Two storey Brick Factory Building with or without power and machinery; also Dry Kiln and store house, located on large lot convenient to two railways. Particulars on application. Address Box 949, Owen Sound, Ont. t.f.

FOR SALE OR RENT

Sash and Door Factory and Sawmill. All complete with plant, in good condition; railroad sidings and water for shipping right to yard. Will sell plant separate or bulk.

8-9 ROSS & CO., Cornwall, Ont.

FOR SALE

Planing Mill, Sash and Door Factory, the property of the late Geo. Ingle, Esq., Lindsay. Good going concern. In order to wind up the estate, the property must be sold. For further information apply to

THE INGLE PLANING MILL,
9 Lindsay, Ont.

FOR SALE**Saw Mill Machinery**

Complete saw mill machinery: equipped with rotary, steam feed carriage, Gang Saw, Resaw, Edger, Butter, Lath Machine. Three Boilers and twin engine 300 H.P.; also saw gummers, filers and one shingle machine, with bolter and barker. For particulars apply:

CHICOUTIMI PULP CO.,
9-12 Chandler, Que.

**MAPLE FLOORING
WANTED**

We want to get in touch with responsible firms in a position to supply maple flooring for British market. Large orders to place. Reply to "Export," care of Canadian Woodworker, Toronto. 9

FOR SALE

Generator, 110 volts, K.W.
150 horse power Engine, Goldie & McCulloch.

Matcher, McGregor & Gourlay, 15 in. head.

12 in. four sides Moulder, Goldie & McCulloch make.

All these machines are in good condition and the prices are right. Apply:

Gold Medal Furniture Mfg. Co., Ltd.,
9-10 Toronto.

**SALESMAN
WANTED**

For Wood Stains and Paste Fillers for Furniture Trade, to represent manufacturer in U.S.A.; to travel the Province of Ontario. Good opportunity for the right man. All answers treated confidentially. Box 65, Canadian Woodworker. 9

WANTED

Cabinet Makers and Rubbers on high grade case goods. Apply:

ANTHES FURNITURE Co.,
9 Kitchener, Ont.

WANTED

Yard man, for inspecting and looking after yard of hardwood lumber.

MERRITT & CO.,
9 Chatham, Ont.

The Extravagance of Poor Lighting

The tool that a workman needs and uses most of all is light. He needs light and plenty of it for efficiency and productivity—to turn out his full share of a product that will pass inspection. He needs light for his bodily health, to kill the germs that darkness hides and nourishes, to keep his vision and his mentality clear and sharp. He needs light to remove the menace of darkness that lurks in every swiftly turning wheel and cog ready to do him bodily injury.

The factory owner needs light quite as badly as his workman. In a factory that is up to modern lighting standards, with plenty of windows to admit sunlight and a scientifically made light-diffusing white paint on all walls, ceilings, beams and posts, there is an immense economy of operation over the factory that is not properly lighted.

In the "daylight" factory, the owner gets twelve per cent. more production, twenty-five per cent. less spoilage and pays for twenty-five per cent. fewer accidents. There is a much larger labor turnover in such a factory and a finer spirit of contentment is manifest there. Light always makes for cheerfulness; darkness makes for discontent.

Surely no employer of labor that works indoors can afford to sacrifice these very definite advantages of better lighting. If old or faulty construction prevents the delivery of more daylight through windows and skylights, he can at least make the utmost use of his natural and artificial sources of light by using the right kind of white paint to reflect and distribute the light, and by renewing the paint as often as is necessary.

FOR SALE

Battery of "Bowser" Tanks for Finish Room. Good Condition.

t.f. Box 32, Canadian Woodworker

**PETRIE'S
LIST
of NEW and USED
WOOD TOOLS**

FOR IMMEDIATE DELIVERY

Wood Lathes

21" Sidney, "Famous."
16" Cowan.
16" Sidney, "Famous."

Wood Planers

26" Double surfacer, divided rolls.
21" Champion planers and matchers, moulding attachment (2).
21" Galt, power and matchers.
21" Best price, double surfacer.
24" MacGregor-Gourlay.
24" Sidney, "Famous," single surfacer.
24" Crescent, single surfacer.
18" Sidney, Famous.
12" buzz, with slotted head (2).
12" Petrie buzz planers, with safety heads (6).

Band Saws

60" Fay & Egan, band re-saw.
36" Famous, pedestal.
32" Famous, pedestal.
30" Cowan, bracket.

Saw Tables

No. 16 Famous, variety.
No. 6 Famous, variety.
No. 5 Famous, combination.
No. 4 Famous, combination.
Galt, iron frame, cut off.
MacGregor Gourlay railway cut-off.
No. 1 Greenlee automatic cross-cut.
7" Williams, swing saw.
No. 4 Famous, swing.
Iron Frame, scroll saw.
Vaughan, portable, drag saw.
Champion, portable drag saw.

Mortisers

Cowan, upright, power.
Galt upright, compound table.
No. 1 Smart, foot power.
No. 2 Osborne-Baker, foot power.

Moulders

13" Clark Demill four side.
12" Cowan four side.
12" Woods four-side, inside.
8" Dundas four-side.
6" Dundas sash sticker.

Clothespin Machinery

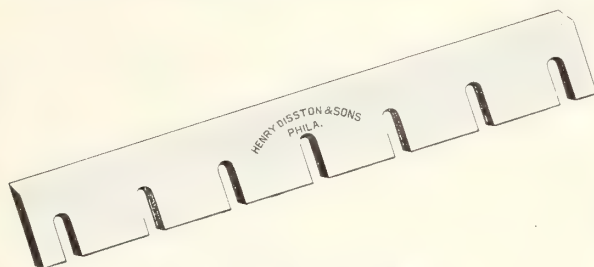
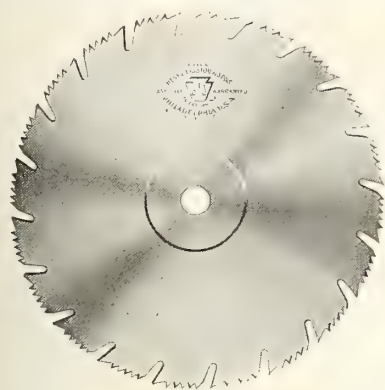
Humphrey automatic lathes (5)
Humphrey double slotters (3)

Miscellaneous

No. 30 Famous, universal woodworker.
Fay, horizontal, boring machine.
No. 7 Sidney, post boring machine.
No. 2 Defiance, belt sander.
Fay & Egan 12 spindle dovetailer.
MacGregor Gourlay 12 spindle dovetailer.
No. M 120 Cowan, panel raiser.
30" Whitney, wood scraper.
20" American, wood scraper.
6" British-American, hand floor scraper.
Dundas, wood frame tenon machine.
Fay, iron frame, double head, tenon machine.
Cowan, veneer press, screw.
No. 2 Reynolds, power screw driver.
Hall's automatic shingle machine.
Watrous lath machine.
26" Dominion lath trimmer.
G. Lindeman, automatic shoe maker.
No. 3 Defiance, rim & felloe rounder.
No. 1 Defiance, axle shaper.
No. 1 Defiance, spoke driver.

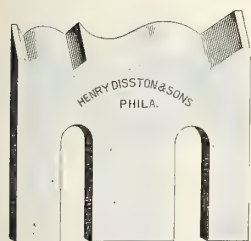
Ask to see our large stock of used supplies—belting, pulleys, machine shop equipment, mill supplies, pipe and fittings, etc. Most of this material is as good as new, and can be bought at greatly reduced prices.

H. W. PETRIE, LTD.
Front St. W., Toronto, Ont.



DISSTON SAWS AND KNIVES

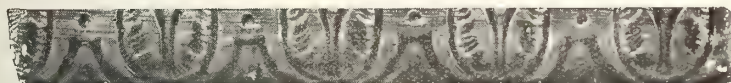
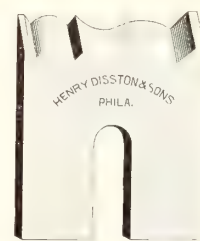
The installation of Disston Saws and Knives—made from the famous Disston Crucible Steel—means more and better work. In the shops where cutting cost and output are carefully checked and counterchecked you will usually find Disston equipment.



HENRY DISSTON & SONS LIMITED

TORONTO - CANADA

Branch: Vancouver, B. C.



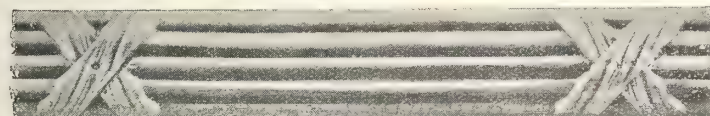
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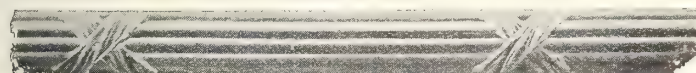
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M 52



M 104

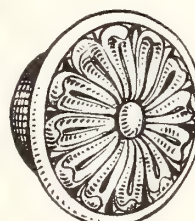


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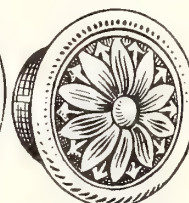
MOULDINGS We are making more Period Mouldings than ever before. Orders should be placed early to assure your supply when needed.

KNOBS The Period Knobs we placed on the market a few months ago are proving very popular. If you have not received samples ask for them now.

ROSETTES A new Period item to accompany the knobs.



OP8



OP5



OP6

Waddell Manufacturing Company

Coldbrook and Taylor, N. W.

Grand Rapids, Mich.

STUTZMAN ROUND SAFETY CYLINDER HEADS

**For Jointers, Buzz Planers, Moulders and Surfacers
The Knives Cut on Same Angle as Square Heads**

These heads are designed to meet the demand for cylinders small in diameter suited for Jointers or Pony Planers, where a well-balanced Round Safety Head is desired. They fill up the gap between the tables, so there is no danger to the operator. Very superior work is accomplished, too, aside from the safety feature.

The parts consist of the head and journal ends made in one piece, the ends of which are fitted with pulleys or one pulley, as required by the machine. The journals have a ground finish, insuring a smooth finish.

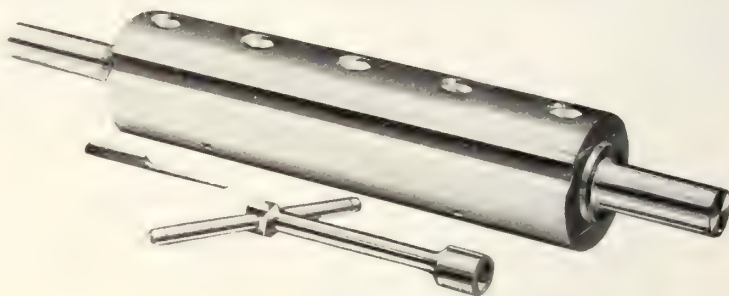
The knives are made of thin high-speed steel and clamped between self-centering caps.

The caps are drilled to admit a draft for setting the knives.

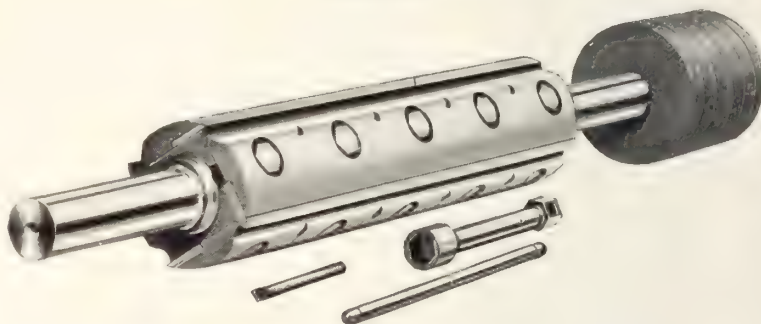
Knives are clamped from the heel of the cap to the front of knives, making it impossible for the chips to get under them.

Novelty knives can be attached to these two and four knife heads.

Gauge for setting knives, also wrench are furnished.



PATENTED



PATENTED

Jointing Heads for Shapers
Shaper Guards
Electric Grinders for Grinding Knives
without Removal from Machine

ASK FOR CIRCULARS

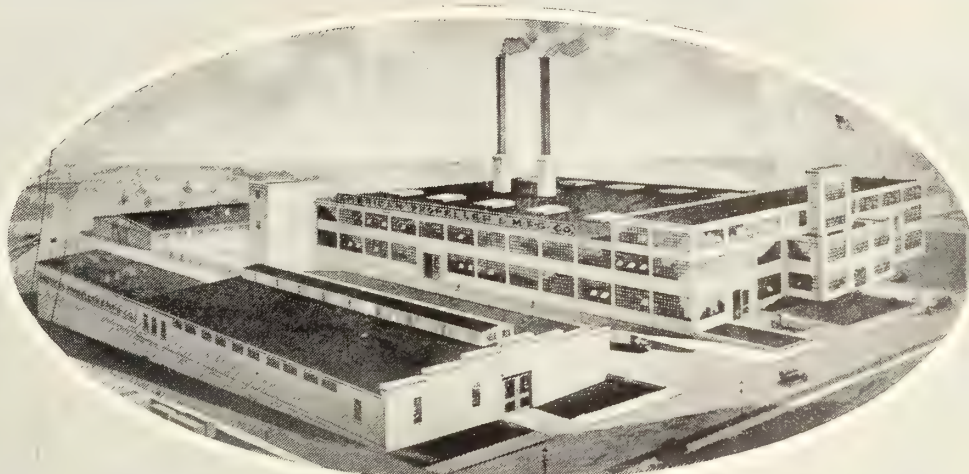
Fischer Manufacturing Company
Williamsport, Pennsylvania



Certificate of Approval Awarded by State of Pennsylvania



Gold Medal Awarded 1914,
New York City

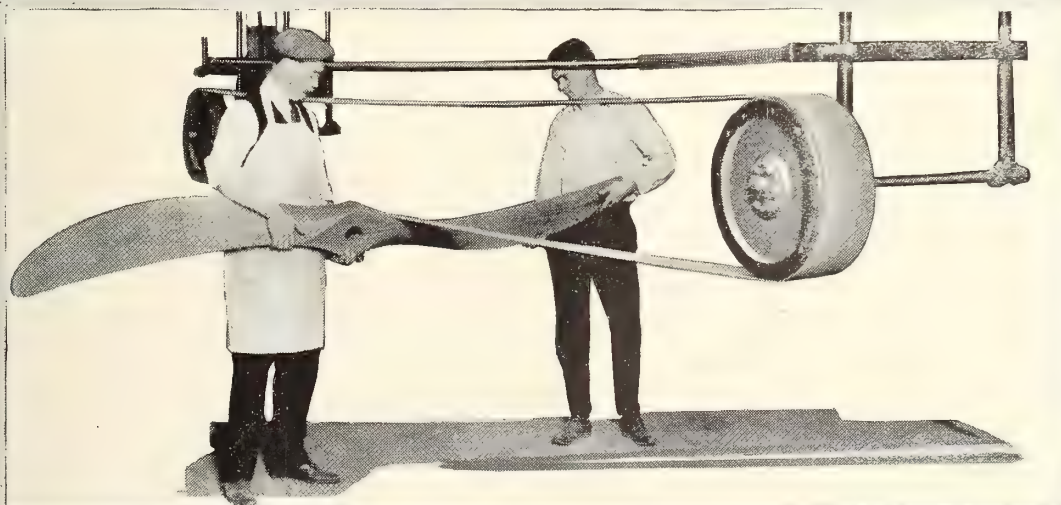


A Story We Couldn't Tell You In War Times

ALL during those hectic days when Industrial America was sweating over the task of producing air craft, they were doing some tall hustling in the plant of The American Propellor Company at Baltimore, Md. They were working night and day making propellers—sanding them with Carborundum Garnet Paper and Cloth. We couldn't say then how glad we were that our paper and cloth was doing its bit in this splendid work. It might have centered unwelcome attention on the American Propellor Plant—

But now we can tell you that they found Carborundum Garnet Products so fast and clean cutting, so uniformly coated with pure, hard, sharp garnet—so flexible, so all-around efficient, that they used them exclusively—and still do. They know that

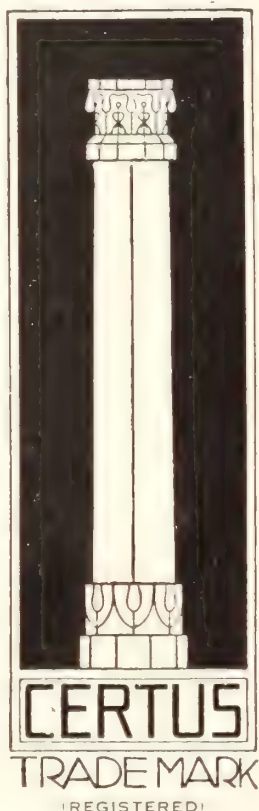
**Carborundum Brand Garnet Products Make Good Sanders,
Better Sanders**



THE CARBORUNDUM COMPANY, NIAGARA FALLS, N. Y.

Certus Cold Glue

(The Original Water-proof Glue)



Joint Glue remaining liquid a full working day after mixing.

1. Highest adhesive and water resisting quality.
2. In comparison lowest priced glue on the market.
3. Saves time, labor, heat and trouble.
4. When mixed with cold water ready for use in fifteen minutes.
5. Suitable for all outside gluing even in cold and wet weather.
6. May be used in jointing machines.
7. Glues natural damp (not wet or green) as well as dry lumber.
8. Stands all climates, even the most humid.
9. Especially adaptable for use in gluing woods of all kinds.
10. Uniform.

Write for sample for testing on your special work. Our services are at your disposal.

CERTUS COLD GLUE CO. - Detroit, Mich.

W. H. CUNNINGHAM & Co., Canadian Distributors.

Canadian Office: 183 Church St., TORONTO, ONT.

C. B. MORROW & CO.,

Distributors for

Pennsylvania, Maryland, Delaware, West Virginia.

Offices: Oliver Building, Pittsburgh, Pa.

T. M. DUCHE & SON, Eastern Distributors, 376-378 Greenwich St., New York City.

SWENSON & SCULLY CO., Distributors for Northern Illinois, Rockford, Ill.

Complete stock carried by

W. H. GAGE GLUE COMPANY

Southern and Southwestern Distributors

114 Pine Street - St. Louis, Mo.

Perkins Vegetable Glue

Uniform
Guaranteed

PERKINS
183

Trade Mark

Patented
Satisfactory

Process and Product Patents covering Perkins Glue were granted July 2nd and March 19th, 1912, and are held valid and infringed by United States Circuit Court of Appeals. Corresponding Letters Patent Granted in Canada.

Be Sure You Know What is Your Actual Glue Cost

The test is not first cost per pound of dry glue but what is your spread per thousand square feet of three or five ply stock, and what is your glue strength?

PERKINS GLUE WINS ON ALL TESTS

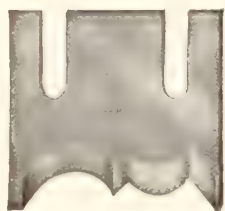
Sold Exclusively by

Perkins Glue Company

Factory & General Offices:
Lansdale, Pennsylvania

Sales Offices:
South Bend, Indiana

The Peter Hay Knife Co., Ltd.



Manufacture the Best
PLANER KNIVES
and **CUTTERS**
OF ALL DESCRIPTION

The Peter Hay Knife Co., Limited
GALT, ONTARIO

PRESSES

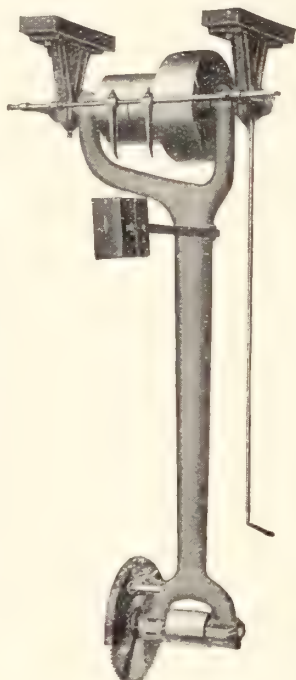
For Veneer and Veneer Drying

Made in Canada

William R. Perrin
Limited
Toronto

Reliable Accuracy

Silver's Swing Cut-Off Saws are not confined to turning out the rough work which is the capacity of many machines of this kind. Silver's Swing Cut-Off Saws are made to turn out rapid, accurate and reliable fine work on hardwood for cabinet and pattern work, interior finish, etc. You'll find them decidedly useful and efficient. Made in four lengths to suit different heights of ceilings.



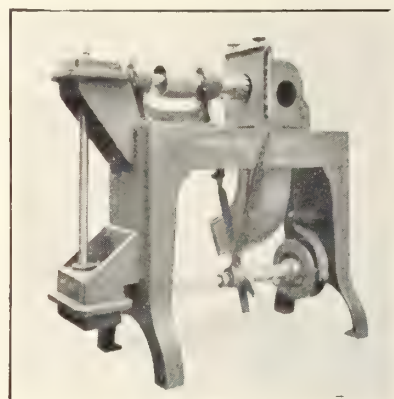
Write us for further particulars regarding prices, etc.

The Silver Mfg. Co.

Box 370

Salem, Ohio, U.S.A.

AUTOMATIC MACHINE FOR CUTTING HOLES



Patents Pending

This machine will cut holes or half holes in long or short boards, smooth and true in size. Will also cut wheels and automatically bore holes in the center at same operation. It works automatically on short blocks, feeding up to the head and pushing them out after they are cut. Has a capacity of 18 wheels or holes per minute. Will make bevel or square edge wheels. When writing give diameter, thickness and kind of wood to be used. Machines are made to suit the work. It has an attachment to cut hand-holds in crate ends, or a Special Machine is made for that purpose. When writing give street number.

Machine is substantially built of iron and steel, ball bearing equipped and worm gears running in grease.

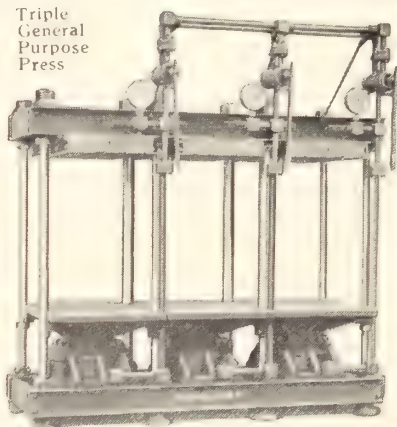
Full detailed description and price on request.

The Virginia Hole Sawing Co.

S. S. See, Manager

14 Third St., N.E., Roanoke, Va.

Triple
General
Purpose
Press



**Farquhar
Monarch
Hydraulic
Press
Machinery**

Our shops are modernly equipped for manufacturing Hydraulic Press Machinery of the highest efficiency. We have our own foundry, and every detail of the work is done by ourselves.

Besides a standard line of Veneer Presses, we build Hot Plate, Vulcanizing, Fibre, Trunk, Die, Curb, etc., etc., Presses to suit individual requirements. Farquhar Hydraulic Pumps are suitable for pressures up to 4,000 lbs. per square inch. Also a complete line of operating valves.

Whatever your requirements in the Hydraulic Press line write us particulars, and our experts will make suggestions without obligation. New Catalogue illustrating recent outfits mailed free on request.

A. B. Farquhar Co. Ltd., Box 171, York, Pa.

SIMONDS

Inserted Tooth Saw

The accompanying picture shows a 96 inch saw, the largest Inserted Tooth Cut-Off Saw ever manufactured for practical purposes—another achievement of Simonds, “The Saw Makers.”

The saw was made for a large Pacific Coast Mill, where this type of saw has been successfully used for several years.

We manufacture Saws and Machine Knives for all purposes.

Write for Prices.

Simonds Canada Saw Co., Limited

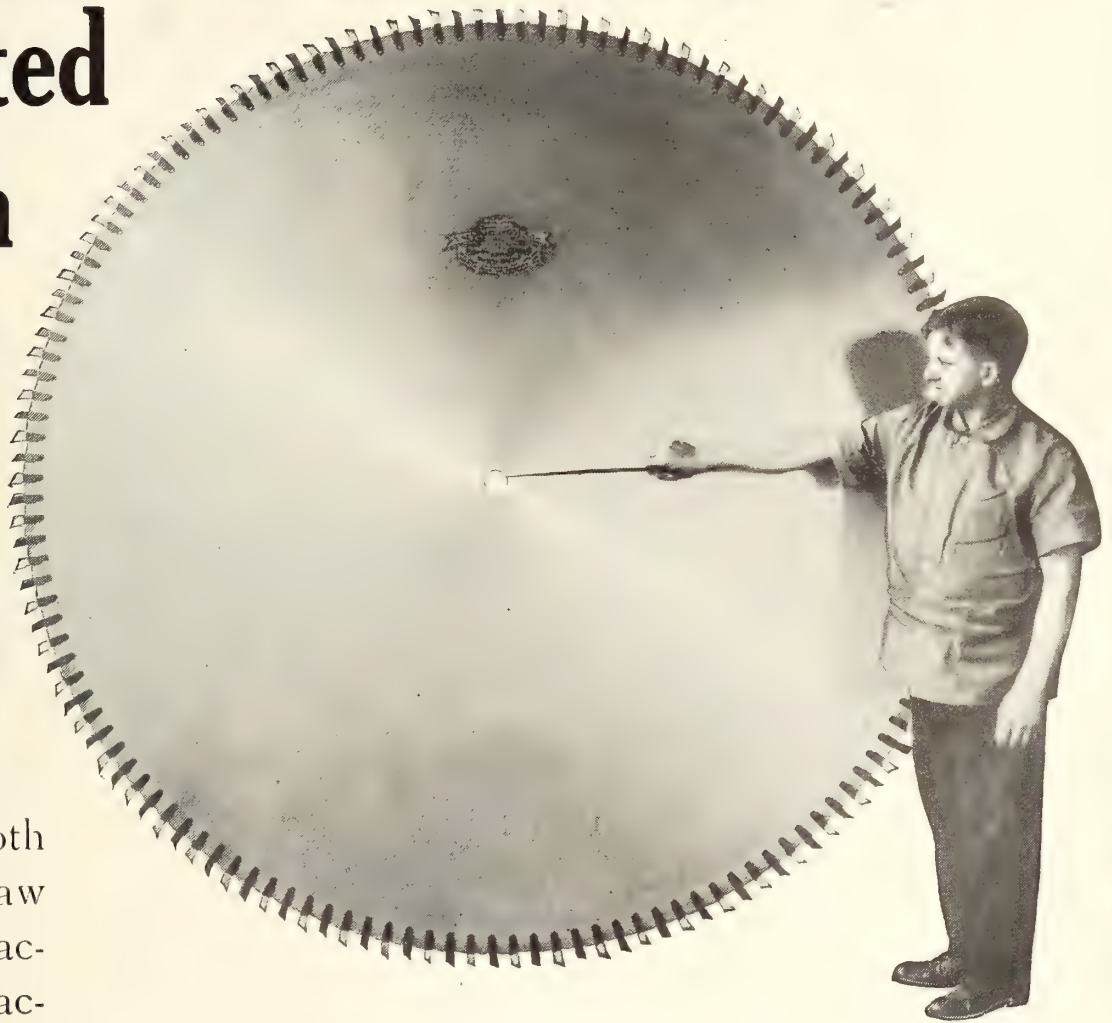
“THE SAW MAKERS”

St. Remi Street & Acorn Ave.

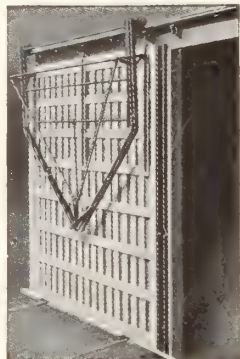
VANCOUVER, B.C.

Montreal, Que.

ST. JOHN, N.B.



The Door Carrier System



Makes your dry-kiln doors steam-tight and saves time, heat, trouble and money.

Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbeted joint, where it is held steam-tight by its own weight. Applicable to old or new kilns.

Ask for catalogue.

**DRY KILN
DOOR CARRIER CO.**

1117 Cornell Ave.
INDIANAPOLIS, IND.

**SAVES 2 HOURS
A DAY**
**SAVES 10 FEET OF
LUMBER.**
*That's \$25.00 a MONTH or
More than Total Cost of this*
**ALL STEEL AUTOMATIC SWING SAW
GUAGE.**
WE SHIP ON TRIAL.
**3500
IN USE
ACT
NOW.**
GUARANTEED AND SOLD BY THE
TANNEWITZ WORKS,
GRAND RAPIDS, MICH.



For Better Work and Greater Service "Maple Leaf" Grooving Saws

From our complete line of guaranteed saws we can meet your needs for special shaped tooth grooving saws in round face, bevel face, shear cut, straight face, etc. Write for catalog and further information regarding our other manufactures, including Dado Heads, Mitre Saws, Novelty Saws, Rip and Cross-Cut Circular Saws, Concave Saws, Band Saws, Hand Saws, Cross-Cut Saws, etc.

Shurly-Dietrich Co., Limited, Galt, Canada

Branches — Vancouver, B.C., and
306-308 Wellington Street, Ottawa

We have the best facilities for the
Manufacture of

SPRING MATTRESS and CAMP COT FRAMES

also DIMENSION STOCK
in Maple, Beech and Birch

Write for prices

John P. Newman Sons'
WIARTON, ONT.

Wire, Wire Bale Ties and Wire Products

Bale ties, Heading ties, Lath ties, Hardwood Flooring ties, Wire Nails, Flat Steel or Wire Barrel hoops. All sizes of Fine Wire in Bright, Tinned or Galvanized, manufactured to order.

Laidlaw Bale-Tie Co., Ltd.

A. T. Diggins, Toronto, Ont. H. E. O. Bull, Montreal, Que.
Harry F. Moulden & Sons, Winnipeg, Man.
Head Office and Works: **HAMILTON, CANADA**

HIGH LABOR COSTS

are giving you as much worry as they are giving us. We can show you how to **reduce** them by driving **seven** screws in the time formerly occupied in driving four.

Read below what one large furniture manufacturer said about our screws to one of his competitors.



See That
Square Hole?

See That
Square Hole.

Robertson Patented Socket Head Wood Screws

We are in receipt of your letter of the 17th in reference to the Robertson screw. We were rather backward in trying to make ourselves believe that this screw is as good as the old slot screw, but we have entirely changed and are now using the socket head screw exclusively. It would surprise you how many more screws of this make the workman can drive than of the old style. You will make no mistake in using their screws altogether.

WE MAKE AND SUPPLY FREE WITH FIRST ORDER BITS FOR
USE IN REYNOLDS MACHINE OR ANY OTHER TYPE DRIVER.

P. L. Robertson Mfg. Co., Ltd.
Milton - - - Ontario

Simply dump a gross of screws (either wood or machine) into the hopper. The machine does the rest

28 Screws— —Per Minute

A marvel of simple and efficient operation, this magazine fed machine is proving an important asset to a large number of progressive manufacturers. Its time and labor saving features soon pay its cost, and its better workmanship makes it a source of constant satisfaction. Let us send you descriptive matter and specifications of various sizes and types.

The Reynolds Machine Co.

Department C

Massillon, Ohio, - U.S.A.



***"Now We Can Stay at
Our Benches and Produce"***

Put a Wallace Bench Saw and a Wallace Bench Planer

out on the floors among the workmen who have cutting, fitting, trimming, assembling or jointing work to do. You immediately speed up production and cut costs in half, for you cut out 80% of your hand work and save 70% of those expensive, time-consuming trips to the stationary machines.

Write for catalogs—it will pay you.
Thousands of shops are already equipped.

J. D. Wallace & Co.

1414 West Jackson Blvd., CHICAGO, ILL.

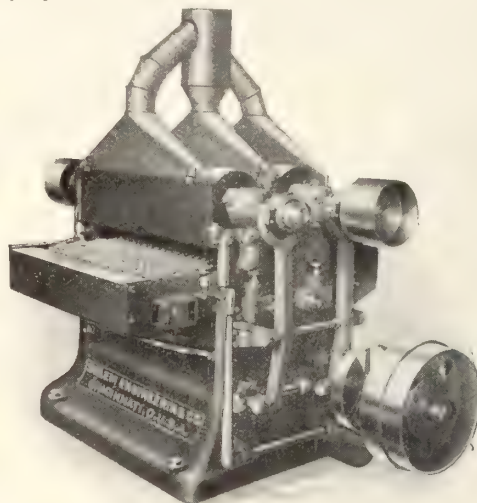
Canadian Representatives:

The Geo. F. Foss Machinery & Supply Company.
The A. R. Williams Machinery Company.

\$1200⁰⁰ to \$1500⁰⁰ Saving on Every Drum Sander

Simplicity of construction allows us to offer a 37" Endless Bed Drum Sander at far below the cost of the old type of machine.

It does more work and saves \$10.00 to \$20.00 in upkeep. Whether you need a sander now or not write for our bulletin and get posted on this economical machine.



One cost saving part used on this machine can be bought separately and attached to any standard make of drum sander.

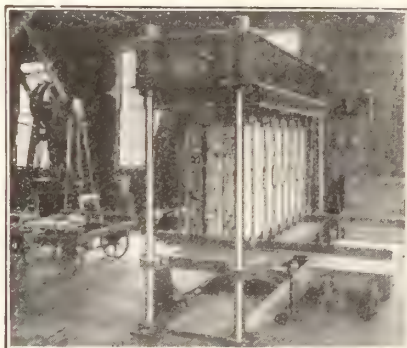
Solem Engineering Co.
SHEBOYGAN, WIS.. U. S. A.

GOOD NEWS

SOME MORE FOOD FOR THOUGHT AND ACTION

In some of our advertisements we mentioned letters of praise from New Albany Veneering Co., Breece Veneer Co., Conway Veneered Door & Mantel Co., Loomis & Hart Furniture Co., and many other representative concerns.

Here are some more of the many letters received since then—one stronger than the other in praise of our Modern Hydraulic Veneer Press Equipment of Wide Open Side and Single Platen Construction with the Quick-acting Single-beam Retaining Clamps and the Quick-loading and Unloading Device.



Pearl City Veneer Co., Jamestown, N. Y., Dec. 2, 1918: "We installed a Francis Hydraulic Veneer Press Outfit in January, 1916, and put it in place of six Power Presses. Anyone acquainted with the manufacture of panels will appreciate what it means in a glue room to do away with six machines and install one in its place that will do the work much more quickly and much easier. The Press is very satisfactory. Other parties, after looking over our equipment, have bought of your concern with the same results."

Alfred Struck Co., Louisville, Ky., Dec. 3, 1918: "We cannot speak too highly of your Hydraulic Veneer Press Outfit. It saves time and cuts costs. Looking at it from the standpoint of our old Screw Presses, it is a long step forward in the manufacture of glued-up stock."

Herzog Art Furniture Co., Saginaw, W. S., Mich., Dec. 2, 1918: "The best way we can tell you what we think of your Hydraulic Veneer Press Outfit is to mail you order for another one, as we did a few days ago. We trust that is sufficient to convince you that we are satisfied with it."

Union Furniture Co., Batesville, Ind., Nov. 30, 1918: "Your Outfit gives us entire satisfaction and we only regret that we did not install it sooner than we did. The workmanship is far superior to our old way of veneering."

Wilson Furniture Co., Louisville, Ky., Dec. 2, 1918: "Your Hydraulic Veneer Press and Glue Spreader are giving perfect satisfaction, and we do not see how we could be without such labor-saving facilities."

We have many more such letters—write for them. Every one of the many users of our Hydraulic Veneer Press Outfit is enthusiastic in praise of it.

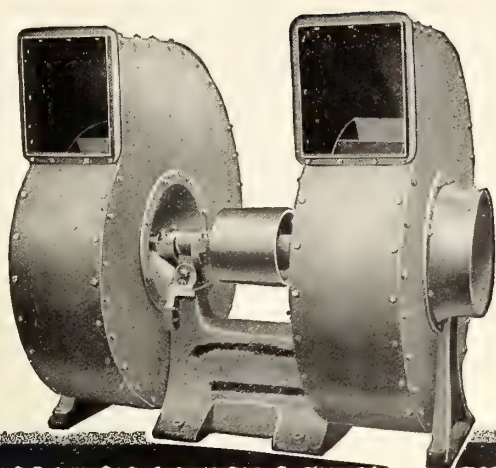
Francis
EST. 1880.

Originators and Manufacturers
of Modern Glue Room Equipment

CHARLES E. FRANCIS CO.

Factory Address: Rushville, Indiana

Francis
EST. 1880.



CANADIAN Slow Speed Reversible MILL EXHAUSTERS

require from 15 to 25 percent less power—and they are designed to handle shavings and other stringy material, as well as sawdust, bark, gases, smoke, etc. Bulletin 256-13 gives tables of speed and power requirements. May we send you a copy?

**Canadian Blower & Forge
Company, Limited**
Kitchener, Ont.

There is no Doubt About it!



NATIONAL KILNS ARE BEST.

They are

**FLEXIBLE,
UNIFORM,
AUTOMATIC.**

You should *investigate*.

Learn *why* and *how*.

We will be glad to explain.

THE NATIONAL DRY KILN CO.

1117 East Maryland St., INDIANAPOLIS, Indiana

"INTERNATIONAL"

Electric Glue Heaters

***Fireless Cooker construction holds glue
at correct working temperatures with-
out guess work.***

***Operates on less current than
an other electric glue heater.***

CLEAN — SAFE — ECONOMICAL

International Heaters are portable—fit any lamp socket. Three heats—high, medium and low. Rapid melting, uniform temperature control. No skin, scum or dirt. No burnt glue.

Built in sizes for all classes of shops—from one pint to fifty gallons. Heavy spun copper construction. No seams or soldered joints. Dry heat. No water bath.

Follow the example of prominent concerns everywhere—specify "International" on your next order. Write for booklet—"Correct Temperature in the Glue Room."

"International Electric Heaters are the Best"



INTERNATIONAL ELECTRIC COMPANY
MANUFACTURERS
ELECTRICAL HEATING APPLIANCES

INDIANAPOLIS, U.S.A.

Canadian Distributors

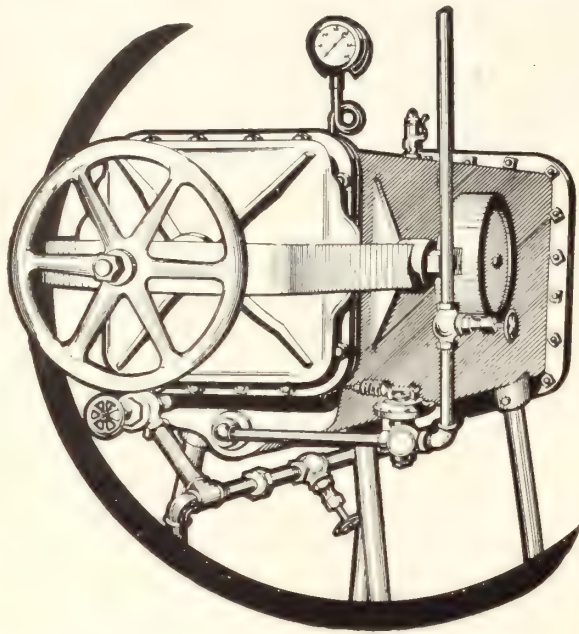
R. E. T. PRINGLE, Limited

TORONTO
95 King Street East

WINNIPEG
703 Confederation Life Bldg.

MONTREAL
401 New Birks Bldg.
VANCOUVER
402 Vancouver Block

Wood Steaming Retort



Wood Bending Manufacturers:

This is one of our

Perfection Retorts

which we guarantee will save you

50% Less Breakage

in your bending department than your present process; that your stock will dry in your forms or presses in one-third less time; that you will have no stained stock; that your stock will retain its shape much better after being bent; that it will dry in your dry-kiln in one-half less time and that your steam consumption will be reduced at least 90 per cent.

The door can be opened and closed in ten seconds, and it is steam and water tight and for this reason can be placed anywhere in your factory.

Compare this IMPROVED RETORT with your present steam boxes, then write us for our Booklet on Progressive Wood Steaming.

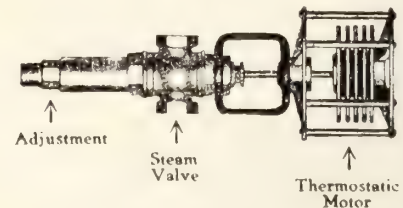
Made in Preston, Ontario

Perfection Wood Steaming Retort Co.

PARKERSBURG - WEST VIRGINIA

If You Can't Get Men Get Machines

Make machines do what men formerly did. Heretofore good men have been tied up watching thermometers. Put Powers Regulators wherever specified temperature must be maintained, and put the men on something else.



Powers No. 16 Regulator

Entirely automatic and self-contained. Requires no air or water pressure for operation. Adapted to control air or liquid temperatures with great accuracy.

Try One 30 Days—FREE

A Powers Heat Regulator will save its cost many times every year. Once in, it's no more trouble, no expense. Adjustable at will to the desired temperature.

Use it 30 days. If you're not satisfied that it saves time, work, worry, and steam, and raises the standard of output, send it back at our expense.

The Powers Regulator Company

Specialists in Automatic Heat Control

The Canadian Powers Regulator Company, Limited

TORONTO - ONTARIO

FREE TRIAL COUPON

The Canadian Powers Regulator Co., Ltd.,
Toronto. Date

Gentlemen:

As per your offer in "Canadian Woodworker," you may send us one of your Regulators, with the understanding that if we are not satisfied we may return it within thirty days and you will cancel the charge.

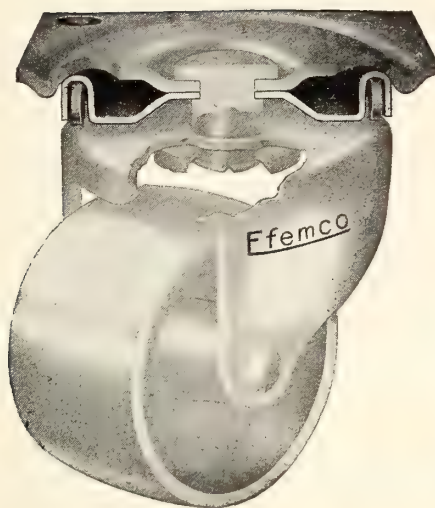
Regulator to be used on

Temp. Desired Steam Pressure

Size of Steam Supply Pipe

Name

Address



An **Efemco**
Product

Always Roll Never Bind

Heavy loads and severe tilting strains can't put an Atlas Plate Roller Bearing Caster out of order or make it bind. The one-piece rollway, extra heavy axle, positive rollway space and rigid, compact construction perfectly support the roller action.

The free and easy rolling of the Efemco Casters gives furniture added value and utility. They rolled into favor with furniture makers eighty-four years ago and are to-day used in steadily increasing numbers.

Plate Casters furnished in sizes 3-4-6-7-8-9.
Grip neck in sizes 3-4-6.

*Write to-day for catalog of Efemco Costers
and the complete Efemco Line.*

FOSTER, MERRIAM AND CO.

Hamilton, Ontario.

Meriden, Conn.

New York City

Efemco Products

Grip Neck Casters
Ball Bearing Casters
Roller Bearing Casters

Truck Casters
Furniture Trimmings
Automobile Accessories

Piston Rings
Cast Aluminum Ware
Grey Iron Castings



*Standardized by
84 years of service*

Efemco Products

Efemco Products

The "Canadian Woodworker" Buyers' Directory

The following regulations apply to all advertisers:—Full page, every issue, thirty-two headings; half page, sixteen headings; quarter page, eight headings; eighth page, four headings.

AIR BRUSH EQUIPMENT

DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

BALL BEARINGS

Chapman Double Ball Bearing Co., Toronto.

BALUSTER LATHES

Garlock-Walker Machinery Co., Toronto, Ont.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.

BAND SAW FILING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

BAND SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Simonds Canada Saw Co., Montreal, Que.
Wallace & Co., J. D., Chicago, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

BAND SAW MACHINERY

Williams Machinery Co., A. R., Toronto, Ont.

BAND SAW STRETCHERS

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

BELTING

Goodyear Tire & Rubber Co., Toronto, Ont.

BENDING MACHINES

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Perfection Wood Steaming Retort Company, Parkersburg, W. Va.
Williams Machinery Co., A. R., Toronto, Ont.

BLOWERS

Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Co., Toronto, Ont.

BLOW PIPING

Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

BOILER ROOM EQUIPMENT

Canadian Morehead Mfg. Co., Woodstock, Ont.

BORING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Reynolds Machine Co., Massillon, Ohio.
Root Company, R. M., York Pa.
Virginia Hole Sawing Co., Roanoke, Va.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

BOX BANDS

Laidlaw Bale-Tie Co., Hamilton, Ont.

BOX MAKERS' MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Neilson & Company, J. L., Winnipeg, Man.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

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Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CANE WEBBING

Overseas Reed & Cane Co., Ionia, Mich.

CARVING MACHINES

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.

CASTERS

Faultless Caster Co., Evansville, Ind.
Foster, Merriam Co., Meriden, Conn.
Weber, Knapp Co., Jamestown, N.Y.

CIRCULAR SAWS

Wallace & Co., J. D., Chicago, Ill.

CLAMPS

Adjustable Clamp Co., Chicago, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

CRATING LUMBER

Elgie-Jarvis Lumber Co., Toronto, Ont.

CUT-OFF SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CUTTER HEADS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hawker Mfg. Co., W. S., Dayton, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Shimer Cutter Head Co., Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CYLINDER HEADS

Cowan & Company, Galt, Ont.

DIMENSION STOCK

Newman Sons, John P., Warton, Ont.

DOOR CARRIERS FOR DRY KILNS

Dry Kiln Door Carrier Co., Indianapolis, Ind.

DOVETAILING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

DOWEL MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Dauber-Bell Machine Co., Oshkosh, Wis.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Hawker Mfg. Co., W. S., Dayton, Ohio.
Williams Machinery Co., A. R., Toronto, Ont.

DOWELS

Canada Wood Specialty Co., Ltd., Orillia, Ont.

DRY KILNS

Canadian Blower & Forge Co., Kitchener, Ont.
Grand Rapids Veneer Works, Grand Rapids, Mich.
National Dry Kiln Co., Indianapolis, Ind.

DUST COLLECTORS

Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

DUST SEPARATORS

Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

EDGERS (Single Saw)

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

EDGERS (Gang)

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

END MATCHING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

EXHAUST FANS

Canadian Blower & Forge Co., Kitchener, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Toronto Blower Company, Toronto, Ont.

FEED ATTACHMENTS

Garlock-Walker Machinery Co., Toronto, Ont.

FLOORING MACHINES

Canada Machinery Corporation, Galt, Ont.
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Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

FLUTING HEADS

Fay & Egan Co., J. A., Cincinnati, Ohio.

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Decorators Supply Co., Chicago, Ill.

FURNITURE LEATHER

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Weber, Knapp Co., Jamestown, N.Y.

GARNET PAPER AND CLOTH

Carborundum Co., Niagara Falls, N.Y.

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Canada Machinery Corporation, Galt, Ont.
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Yates Machine Co., P. B., Hamilton, Ont.

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Carborundum Co., Niagara Falls, N.Y.

GLUE

Bury & Co., Robt., Toronto, Ont.
Canada Glue Company, Brantford, Ont.
Certus Cold Glue Co., Detroit, Mich.
Kane Manufacturing Co., Chicago, Ill.
Perkins Glue Company, South Bend, Ind.

GLUE CLAMPS

Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Neilson & Company, J. L., Winnipeg.

GLUE HEATERS

Fay & Egan Co., J. A., Cincinnati, Ohio.
International Electric Co., Indianapolis, Ind.
Jackson, Cochrane & Company, Kitchener, Ont.
Pringle, R. E. T., Toronto, Ont.

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Canada Machinery Corporation, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

Basswood

1 in., 1 1/4 in., and 1 1/2 in. Dry Basswood

Dry Birch Stock

We offer in **Birch** and **Maple**
End Stock 1 x 7 in., and wider, 1 x 6 in.

All thicknesses and grades in
MAPLE, BIRCH, ELM, BASSWOOD
and **BROWN ASH**

Spruce, Hemlock and Pine

Can saw to order at MacDonald's Siding
Widdifield and Powassan

Let us Quote on Your Requirements

Hart & McDonagh

513-14-15 Continental Life Building
TORONTO

TORONTO, CANADA

18 Toronto St.

The Elgie & Jarvis Lumber Co., Ltd.

100 M. 1 x 4 and up White Pine, No. 1 Mill Cull
60 M. 1 x 10 White Pine, No. 1 Mill Cull
40 M. 1 x 12 White Pine, No. 1 Mill Cull
90 M. 1 x 7" and up White Pine, No. 1 and No.
2 Mill Cull
60 M. 1 x 4 and up White Pine, No. 2 Mill Cull

ALL DRY STOCK

ALSO SPRUCE CRATING

THE GALL LUMBER CO.

Established 1898

Limited

Wholesale Dealers in
Foreign and Domestic

Hardwoods

Offices, Dry Kilns, Ware-
houses and Sorting Yards.
Lake Street, Foot of
Spadina Avenue

TORONTO,
CANADA

Do Not Gamble on Your Veneer Tapes

BUY THE BEST.

Ideal Veneer Tapes

The material with the guarantee behind it

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and paper, plain and perforated,
which will cover all of your re-
quirements.

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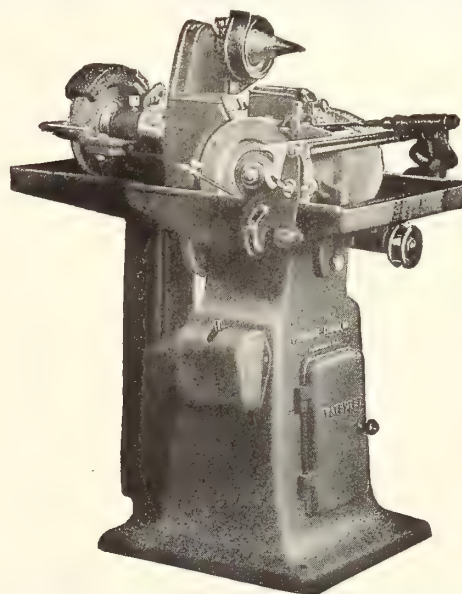
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THE MODERN EDGE TOOL SHARPENING MACHINE
THE STANDARD FOR ALL WOOD-WORKING SHOPS



No. 481 MOTOR OR COUNTERSHAFT DRIVE
An automatic attachment for grinding long knives
can be furnished with this machine.

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1. Coarse Oilstone Wheel. 2. Fine Oilstone Wheel.
3. Grinding Cone. 4. Leather Wheel. 5. Emery Wheel.

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HANOVER, PA.

"Canadian Woodworker" Buyers' Directory—Continued

GLUE SPREADERS

Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GLUE ROOM EQUIPMENT

Perrin & Company, W. R., Toronto, Ont.

GRINDERS (Cutter)

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

GRINDERS (Knife)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.

GRINDING WHEELS

Carborundum Co., Niagara Falls, N.Y.

GROOVING HEADS

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.

GUM LUMBER

Aberdeen Lumber Co., Pittsburg, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
Anderson-Tully Co., Memphis, Tenn.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bellgrade Lumber Co., Memphis, Tenn.
Brown & Co., George C., Memphis, Tenn.
Churchill-Milton Lumber Co., Louisville, Ky.
Cornelius Lumber Co., St. Louis, Mo.
Gum Lumber Association, Memphis, Tenn.
Holly Ridge Lumber Co., Louisville, Ky.
Nickey Bros., Memphis, Tenn.
Paepcke-Leicht Lumber Co., Chicago, Ill.
Probst Lumber Co., Cincinnati, Ohio.
Thomas & Proetz Lumber Co., St. Louis, Mo.

HAND SCREWS

Fay & Egan Co., J. A., Cincinnati, Ohio.

HANDLE & SPOKE MACHINERY

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Whitney & Son, Baxter D., Winchendon, Mass.

HARDWARE

Laidlaw Bale-Tie Co., Hamilton, Ont.*
Weber, Knapp Co., Jamestown, N.Y.

HARDWOOD LUMBER

Aberdeen Lumber Co., Pittsburgh, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
American Oak Mfrs.' Assn., Memphis, Tenn.
American Walnut Association, Washington
D.C.
Anderson-Tully Co., Memphis, Tenn.
Atlantic Lumber Company, Toronto, Ont.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bellgrade Lumber Co., Memphis, Tenn.
Bonner & Sons, J. H., Memphis, Tenn.
Brown & Company, Geo. C., Memphis, Tenn.
Burns & Knapp Lumber Co., Conneautville, Pa.
Bury & Company, Robert, Toronto, Ont.
Cornelius Lumber Co., St. Louis, Mo.
Canadian General Lumber Co., Toronto, Ont.
Churchill-Milton Lumber Co., Louisville, Ky.
Clark & Sons, Edward, Toronto.
Darby Hardwood Lumber Co., Memphis, Tenn.
Des Moines Sawmill Co., Des Moines, Iowa.
Dooley Lumber Co., F. T., Memphis, Tenn.
Elgie & Jarvis Lumber Co., Toronto, Ont.
Evansville Band Mill Co., Evansville, Ind.
Gayoso Lumber Co., Memphis, Tenn.
Hart & McDonagh, Toronto, Ont.
Heyser Lumber Co., W. E., Cincinnati, Ohio.
Holly Ridge Lumber Co., Louisville, Ky.
Hunt, Wellington & Smith, Nashville, Tenn.
Kersley, Geo., Montreal, Que.
Korn-Conkling Co., Cincinnati, Ohio.
Kraetzer-Cured Lumber Co., Greenwood, Miss.
Lawrence & Co., F. J., St. Louis, Mo.
Long-Knight Mfg. Co., Indianapolis, Ind.
Maley & Wertz, Evansville, Ind.
McLennan Lumber Co., Montreal, Que.
Memphis Band Mill Co., Memphis, Tenn.
Mowbray & Robinson, Cincinnati, Ohio.

Paepcke Leicht Lumber Co., Chicago, Ill.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City.
Percy E. Heeney, Kitchener, Ont.
Pickrel Walnut Co., St. Louis, Mo.
Probst Lumber Co., Cincinnati, Ohio.
Shafer Hardwood Co., John I., South Bend,
Ind.
Spencer, C. A., Montreal, Que.
Stark & Co., Jas. E., Memphis, Tenn.
Stimpson & Co., J. V., Owensboro, N. Y.

HYDRAULIC VENEER PRESSES

Perrin & Company, Wm. R., Toronto, Ont.

JOINTERS

American Woodworking Machinery Company,
Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

LATHES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.

MACHINE KNIVES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

METALINE NAILS

Dominion Tack & Nail Co., Galt, Ont.

MITRE SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

MOULDERS

Hall & Brown Woodworking Machine Co., St.
Louis, Mo.

MULTIPLE BORING MACHINES

Root Company, B. M., York, Pa.

MULTIPLE BOXING MACHINES

Fay & Egan Co., J. A., Cincinnati, Ohio.
Nash, J. M., Milwaukee, Wis.

OIL STONE GRINDERS

Mummert-Dixon Co., Hanover, Pa.

PANELS

Hay & Co., Limited, Woodstock, Ont.
Waetjen & Co., George L., Milwaukee, Wis.

PATTERN SHOP MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company,
Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PERIOD MOULDINGS

Waddell Mfg. Co., Grand Rapids, Mich.

PERIOD TURNINGS

Walter & Sons, J., Kitchener, Ont.

PLANERS

American Woodworking Machinery Company,
Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St.
Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLANING MILL MACHINERY

American Woodworking Machinery Company,
Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PORTABLE DRILLS

Wisconsin Electric Co., Wisconsin, U.S.A.

PRESSES (Veneer)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Co., Wm. R., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.

RESAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RIM AND FELLOE MACHINERY

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.

RIP SAWING MACHINES

American Woodworking Machinery Company,
Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St.
Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company,
Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RUBBING MACHINES

DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.
Paasche Air Brush Co., Chicago, Ill.

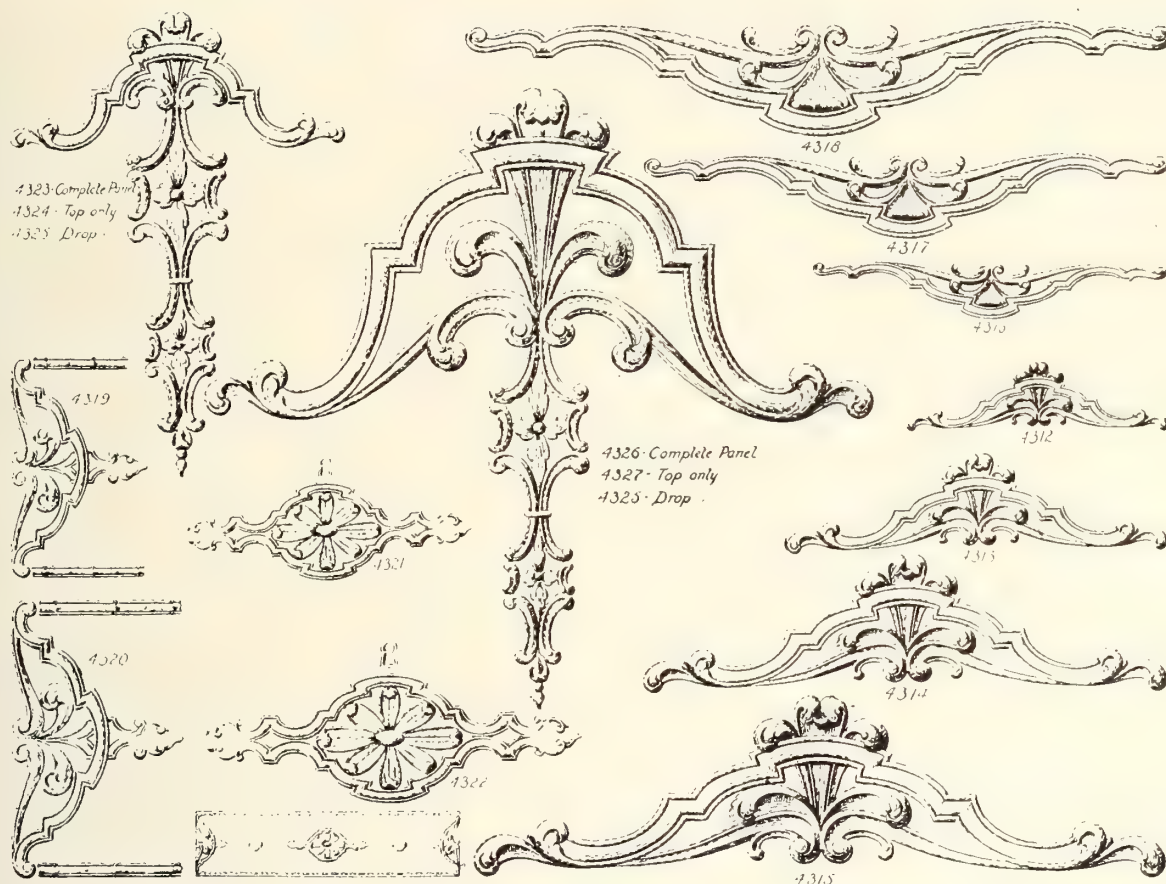
SAFETY DEVICES

Cowan & Company, Galt, Ont.

SANDERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St.
Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company,
Preston, Ont.
Solem Engineering Co., Sheboygan, Wis.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

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WE SOLICIT YOUR INQUIRIES

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"Canadian Woodworker" Buyers' Directory—Continued

SASH, DOOR & BLIND MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAWS

Atkins & Co., E. C., Indianapolis, Ind.
Radcliff Saw Mfg. Company, Toronto, Ont.
Shurly-Dietrich, Ltd., Galt, Ont.
Simonds Canada Saw Co., Montreal, Que.
Wallace & Co., J. D., Chicago, Ill.

SAW SWAGES

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.

SAW TABLES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

SCRAPING MACHINES

Canada Machinery Corporation, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.

SCREW DRIVING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Reynolds Machine Co., Massillon, Ohio.

SCROLL SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SECOND-HAND MACHINERY

Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

SHAPERS

American Woodworking Machinery Company, Rochester, N.Y.
Cowan & Company, Galt, Ont.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS

Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

SPRING MATTRESS FRAMES

Newman Sons, J. P., Warton, Ont.

SPRINGS FOR UPHOLSTERY

Weber, Knapp Co., Jamestown, N.Y.

STAINS

Ault & Wiborg, Toronto, Ont.
Du Pont Fabrikoid Co., Toronto.
Marietta Paint & Color Co., Marietta, Ohio.

SINGLE SPINDLE BOXING MACHINES

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.

STAVE SAWING MACHINE

Whitney & Son, Baxter D., Winchendon, Mass.

SURFACERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Tannevitz Works, Grand Rapids, Mich.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES

Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES

Walter & Company, B., Wabash, Ind.

TACKS AND NAILS

Dominion Tack & Nail Co., Galt, Ont.

TEMPERATURE REGULATORS

Canadian Powers Regulator Co., Toronto, Ont.

TENONING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TIME CLOCKS

International Business Machines Co., Toronto, Ont.

TRIMMERS

American Woodworking Machinery Company, Rochester, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRUCKS

National Dry Kiln Co., Indianapolis, Ind.

UPHOLSTERER'S FLOCK AND BATTING

Bauers Limited, Waterloo, Ont.

VARNISHES

Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg Company, Toronto, Ont.
Du Pont Fabrikoid Co., Toronto.
Jamestown Wood Finishing Co., Jamestown, N. Y.
Penfound Varnish Co., Toronto, Ont.

VARNISH SPRAYERS

DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

VENEERS

Bury & Company, Robert, Toronto, Ont.
Central Lumber Co., Indianapolis, Ind.
Christman Veneer & Lumber Co., St. Louis, Mo.
Dean Spicker Company, Chicago, Ill.
Empire Veneer Company, Chicago, Ill.
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Geo. Kersley, Montreal, Que.
Kotn-Conkling Co., Memphis, Tenn.
Long-Knight Lumber Co., Indianapolis, Ind.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Nartzik, J. J., Chicago, Ill.
National Veneer & Lumber Co., Indianapolis, Ind.
North Vernon Lumber Co., North Vernon, Ind.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Roberts & Co., John N., New Albany, Ind.
Southern Veneer Mfg. Co., Louisville, Ky.
Thompson Veneer Co., W. T., Edinburgh, Ind.
Toronto Veneer Company, Toronto, Ont.
Underwood Veneer Co., Wausau, Wis.
Veneer Manufacturers Co., Chicago, Ill.
Waetjen & Co., George L., Milwaukee, Wis.

VENEER TAPE

Ideal Coated Paper Co., Brookfield, Mass.

VENTILATING APPARATUS

Canadian Blower & Forge Co., Kitchener, Ont.

VENEER JOINTERS

Garlock-Walker Machinery Co., Toronto, Ont.

VENEER MACHINERY

Garlock-Walker Machinery Co., Toronto, Ont.

VENEER PRESSES (Hand and Power)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Francis, Chas. E., Rushville, Ind.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Company, Wm. R., Toronto, Ont.

VICES

Fay & Egan Co., J. A., Cincinnati, Ohio.

WOOD FINISHES

Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg, Toronto, Ont.
Penfound Varnish Co., Toronto, Ont.

WALNUT LUMBER

American Walnut Association, Washington, D. C.
Pickrel Walnut Company, St. Louis.

WOOD SCREWS

Robertson Mfg. Co., P. L., Milton, Ont.

WOOD TURPENTINE

Brown Corporation, Quebec, Que.

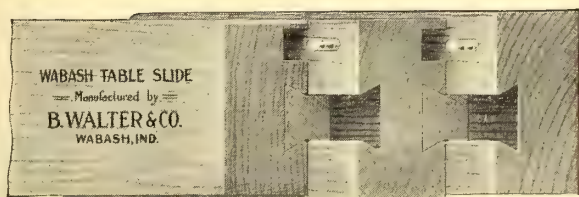
WOOD TURNING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Mattison Machine Works, Rockford, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES

Fay & Egan Co., J. A., Cincinnati, Ohio.

THE SLIDE IS THE HEART OF YOUR EXTENSION TABLE



*If the Slide Does Not Work Properly
Your Whole Table is Condemned*

**Wabash Slides insure
Satisfied Customers**

SLIDE MAKING is a SPECIALTY BUSINESS

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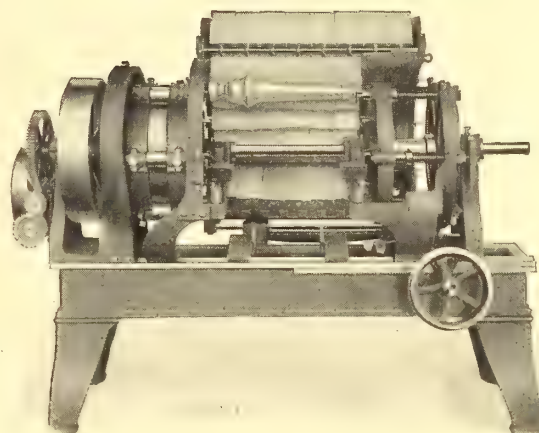
B. Walter & Company

Edsall St., Wabash, Ind.

Canadian Representative:

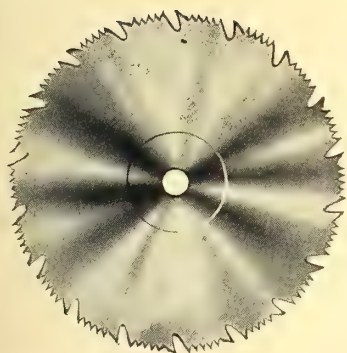
A. B. CAYA, 28 King St. East, Kitchener, Ont.

It's the Handle Man's BEST FRIEND



In these days of high cost of manufacture and lack of labor, the Nash Handle Sander is more than ever proving its value to the handle manufacturer.

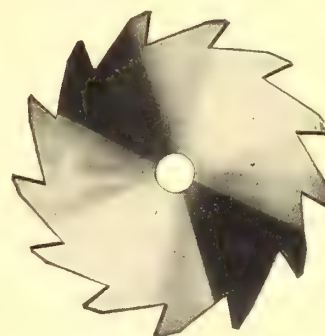
J. M. NASH, Milwaukee, Wis.



ATKINS

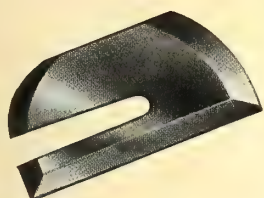
STERLING QUALITY

SAWS and KNIVES



The best steel—the most careful and accurate workmanship—the equipment that will eventually save you money.

Atkins Sterling Quality Saws and Knives are proving their superiority by competitive tests in the largest plants of the country. We welcome your most careful investigation, as we know the satisfaction that will result.



Write to-day for our Knife Booklet "CW"
and Pattern Template Paper.



E. C. ATKINS & CO.

Makers of Sterling Saws

Factory—HAMILTON, Ont.

Vancouver Branch—109 Powell Street

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Cabriole

LEG-FORMING LATHE



TRUE Queen Anne Legs are shaped with difficulty unless the machine room contains a lathe especially adapted for that work.

The "214" will turn chair and table legs, dresser and chiffonier posts—in fact, practically any design of Cabriole leg—twice as fast and at one-half the cost of any other method.

It is automatic and can be operated by an unskilled workman or boy. While a leg is being turned, the operator can sand one; or he can keep two or three of the forming lathes busy, thus greatly increasing production with no extra outlay for labor.



*Ask for our
new
descriptive
bulletin
which
covers the
details.*

MATTISON MACHINE WORKS

Rockford, Illinois,
U.S.A.

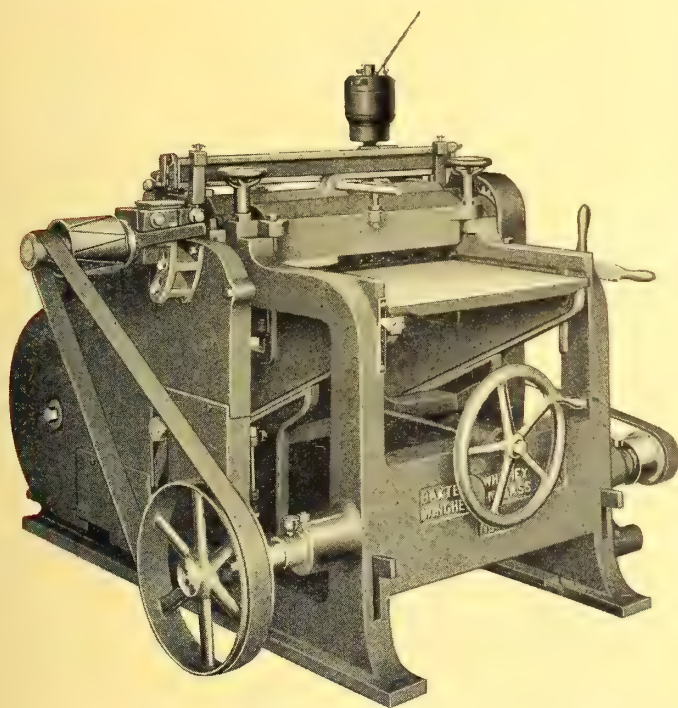
Selling Representatives for New England:
Baxter D. Whitney & Son, Winchendon, Mass.

CANADIAN WOODWORKER

and
Furniture Manufacturer

THE WHITNEY 30" No. 32 Single Planer with Round Cutter Head and Electric Grinder

has special features that appeal to every woodworker, such as the



30" No. 32 Single Planer—Round Cutter Head and Motor Grinder

RIGID FRAME with ample weight of metal.

BED raised and lowered on Solid Wedges operating on wide tracks.

HARDENED CENTRE TABLE made extra thick.

AUTOMATIC CHIPBREAKER working concentric with the cutter head.

SIDE CLAMP CUTTER HEAD BOXES easily detached.

CUTTER HEAD with long bearings of large diameter.

REMOVABLE BABBITTED FEED SHAFT BOXES.

SECTIONAL FEED ROLLS to handle narrow and uneven stock.

MACHINE CUT GEARS.

These are but a few of the features that enable the Whitney Planer to do superior surfacing at the lowest cost.

These machines can be furnished with two or four-knife Square Cutter Heads or four-knife Round Cutter Heads, Flexible or Sectional Chip-breaker and Motor-driven Grinders and Devices.

Write us for further information about this machine.

BAXTER D. WHITNEY & SON, Inc., Winchendon, Mass.

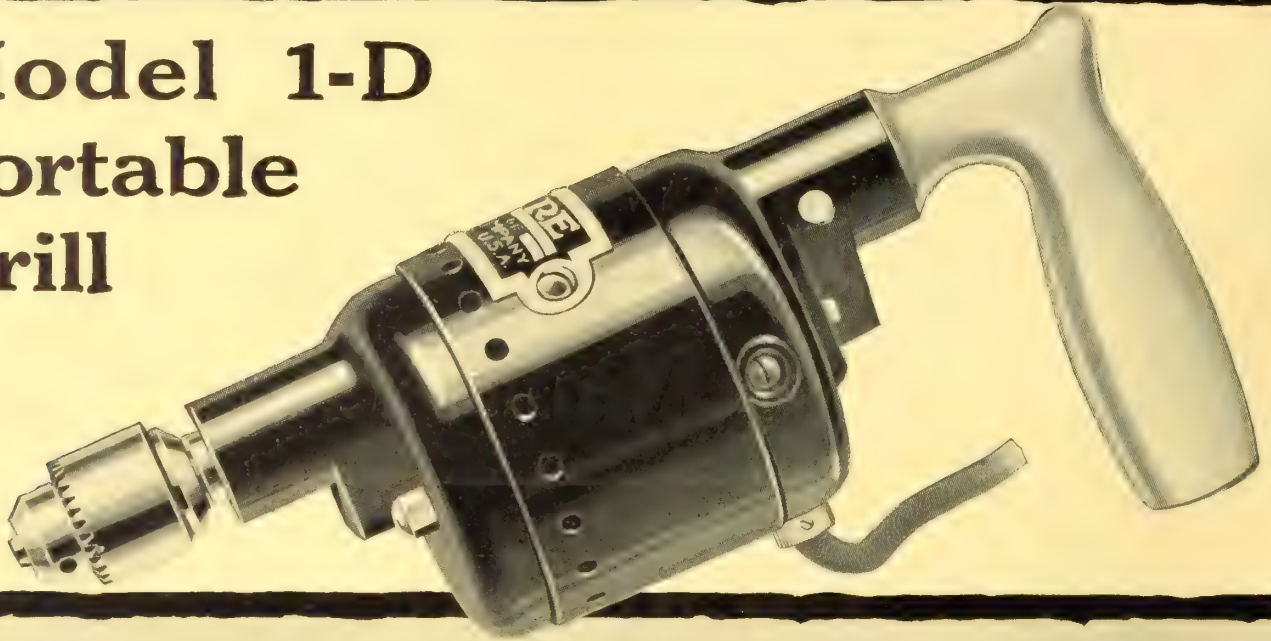
H. H. Plummer & Co.
451-453 Monadnock Bldg.,
San Francisco, Cal.

New York Office:
World's Tower Building,
110 West 40th Street.
C. L. Babcock, Manager.

Canadian Representatives:

H. W. Petrie, Limited
Toronto, Ontario

Model 1-D Portable Drill



HANDY—ECONOMICAL—EFFICIENT

Specifications:

Length—10 inches.

Weight—4 $\frac{3}{4}$ pounds.

Capacity—Steel, 0 to $\frac{1}{8}$ ". Wood and alloys, 0 to $\frac{1}{4}$ ".

Motor—Universal, on either direct or alternating current.

Diameter of Motor—3 $\frac{3}{8}$ inches.

Spindle—Offset from center $\frac{3}{16}$ ".

Helical Gears.

Aluminum Handle.

Complete with 10-ft. cord, plug, switch and chuck.

Jacob's Chucks used as a regular equipment.

FOR speed in drilling and counter-sinking small holes, this tool is just what you need. It can be used on any kind of material—steel, iron, brass, aluminum or wood—and gives lasting service.

If your dealer cannot supply you with the Model 1-D, tell us about your requirements.

Wisconsin Electric Company
7116 Sixteenth Street, Racine, Wisconsin, U. S. A.

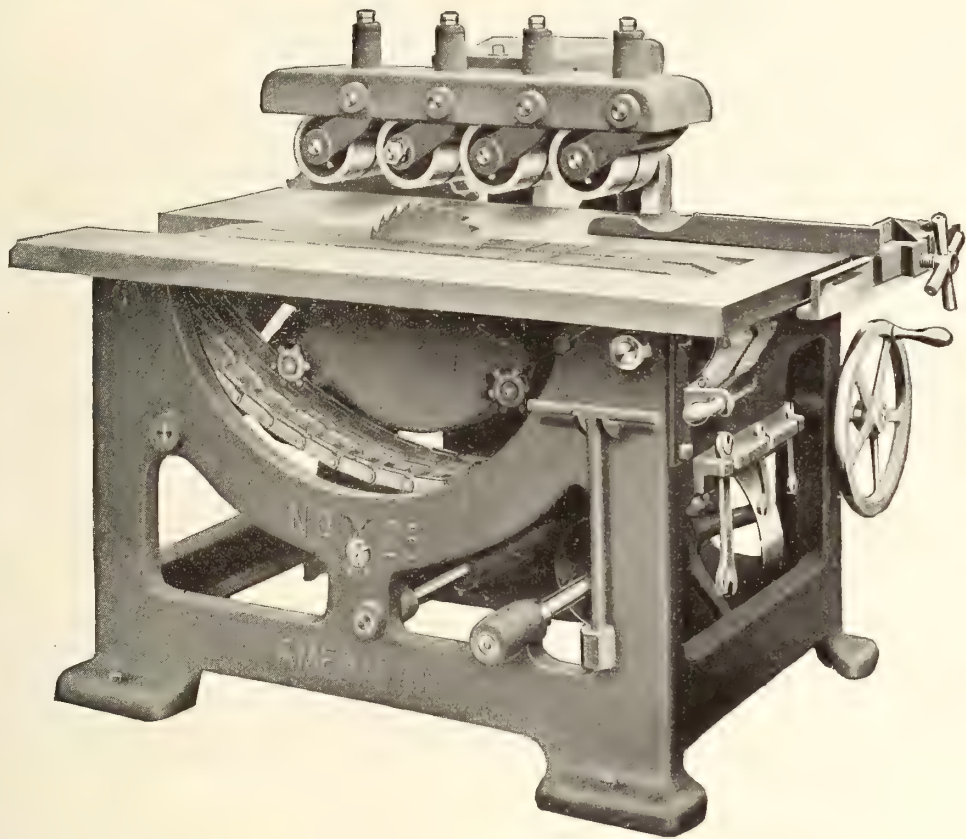
DUMORE GEARED ELECTRIC DRILLS

AMERICAN WOOD WORKING MACHINERY CO.

ROCHESTER, N. Y.

SALES OFFICE FOR BRITISH COLUMBIA, PORTLAND OREGON
AGENTS FOR THE REST OF CANADA GARLOCK-WALKER MACHINERY CO., TORONTO
AGENTS FOR GREAT BRITAIN THE PROJECTILE CO., LONDON

FIRST IN QUALITY



American No. 25—Edging Saw

This is a medium price Edging Saw of a superior order—thoroughly efficient and embodying first class workmanship. It will take stock as short as 5 inches and 20 inches wide.

Write Garlock-Walker for circular.

CANADIAN



SALES AGENTS

Garlock-Walker Machinery Company

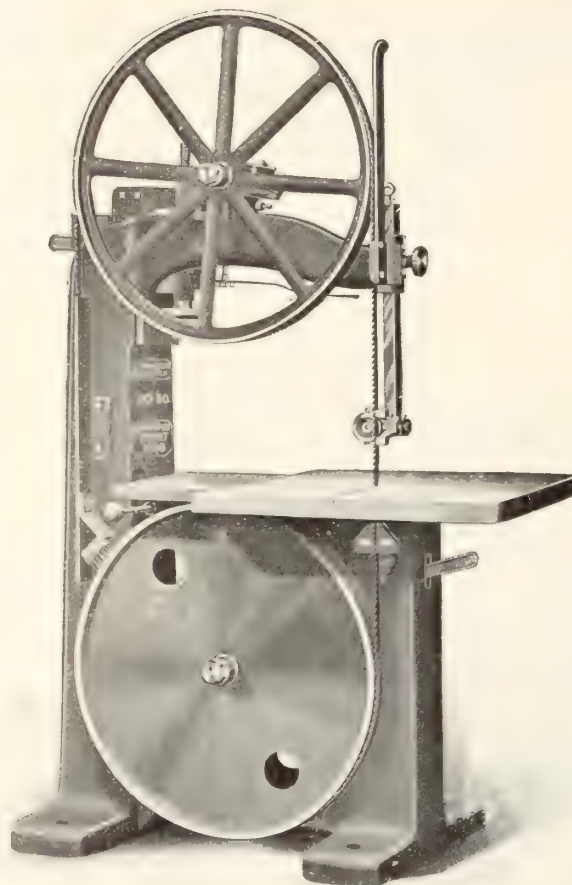
32 Front Street West, TORONTO, ONT.

Limited

TORONTO

MONTREAL

WINNIPEG



Save 25% to 50% of Blade Upkeep and Power Cost Get Two, Even Three Times As Much Work

It's not the blades that wear out that cost, it's those that break.

It's the broken blades that cut down productive time and cost to repair and to replace.

Blade breakage is reduced to a minimum on Fay-Egan No. 50—36" Square Column "Lightning Line" Band Scroll Saws.

The Fay-Egan "Knife Edge" Blade Tension, made on the principle of a fine laboratory balance scale, is so sensitive that it compensates for changes in atmospheric conditions—yet, so flexible, you can pass a block between blade and wheel, while running, without breaking the blade. Folks tell us blade expense on "No. 50" averages 50 to 75 per cent. less than on the old timers.

The solid lower wheel acts like the fly wheel on your engine, its momentum carrying the load, so that the power consumption is reduced fully one-half, while at the same time it controls the light-spoked upper one, preventing over-running and choking down on a heavy cut.

The heavy square column eliminates vibration and permits the wheels to be revolved at 50 to 100 per cent higher speed, increasing the cutting capacity to double, and in some cases, triple that of the ordinary band saw.

As a user of saws, you cannot afford to ignore what Fay-Egan Square Column Band Saws are doing for others and can do for you. An investigation does not obligate you.

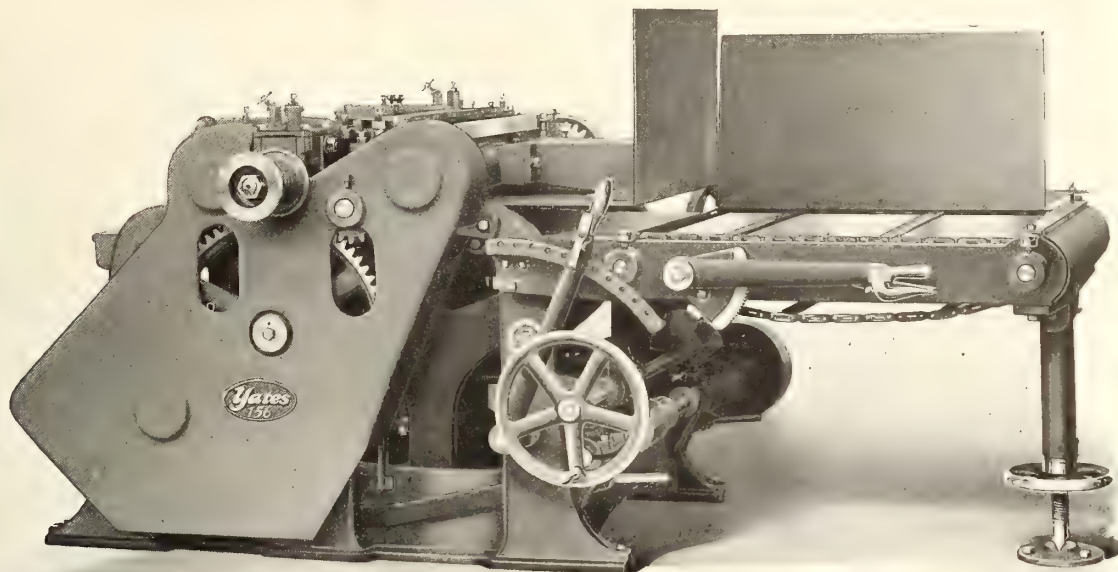
Write for Bulletin M-4

J. A. FAY & EGAN CO.

153-163 W. Front St.

CINCINNATI, O.

Simple, Sturdy and Strong



"The Invariable Choice of the Man Who Knows."

Simplicity and strength are two outstanding features of the No. 156. It is easy to operate and is built to last beyond your expectations. It will dress stock from one-eighth of an inch to six inches thick, therefore can be used both as a cabinet and general utility surfacer. The manufacturer who installs a

Yates No. 156 Cabinet Single Surfacer

saves sander time on account of the fine finish. Built with or without motor drive and hopper feed. Equipped with YATES head and knives, it will give a super-finish to cabinet, furniture or box stock.

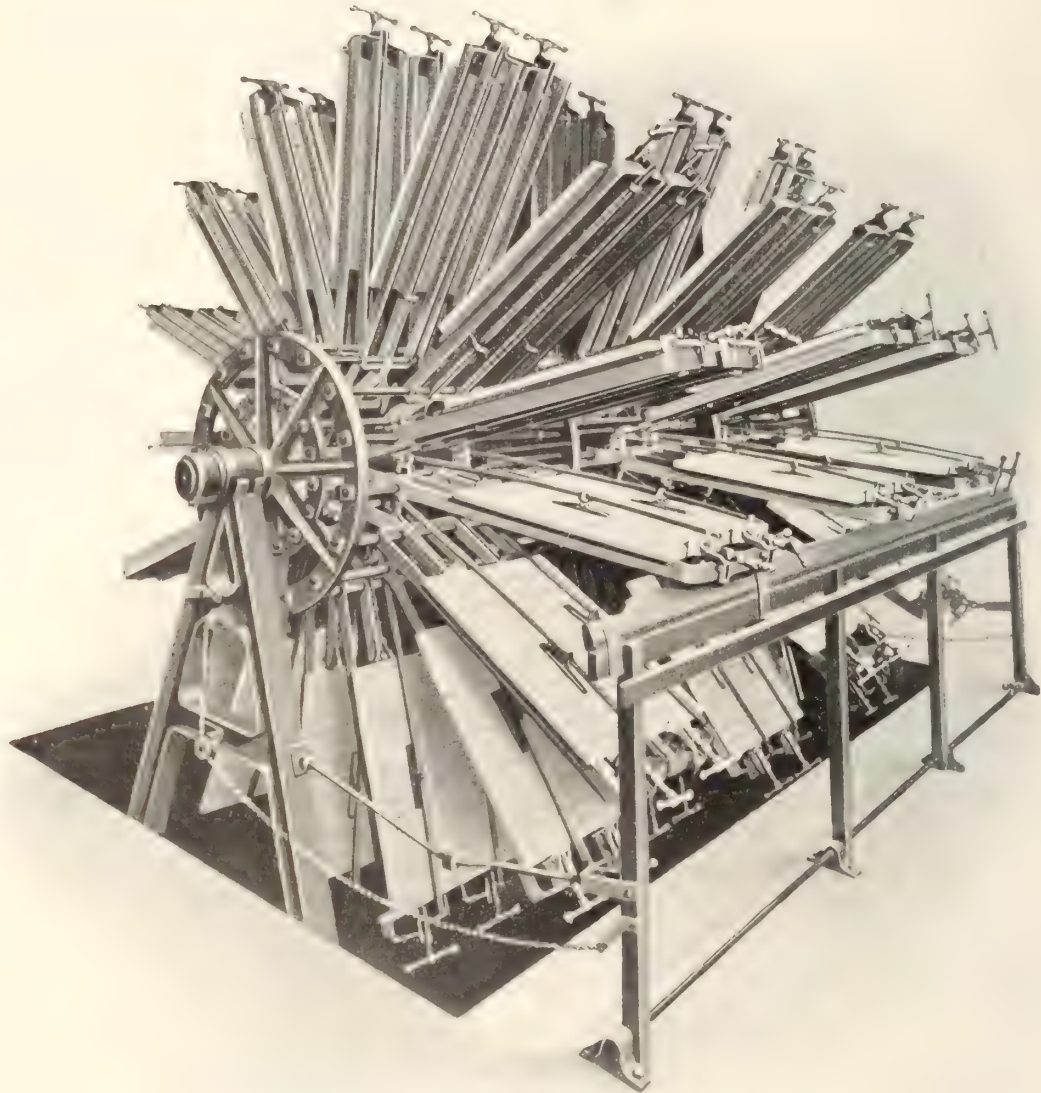
MADE IN CANADA.



P. B. Yates Machine Co. Ltd.

HAMILTON, ONT. CANADA
U.S. PLANT BELOIT, WIS.

The No. 200 Perpetual Revolving Clamp



Simplicity marks this No. 200 Perpetual Revolving Clamp as ideal for efficiency. Producing perfect results wherever used, you'll find it excellent for chair seats, furniture, dimension stock, school desks, refrigerator ends, special shapes, etc. The No. 200 Perpetual Revolving Clamp occupies less space and gives greater room for increasing output. Takes in $2\frac{1}{2}$ " in thickness up to 40" wide and 14' long. Each clamp is fitted with side brackets of steel, giving 10 inches spread to facilitate the handling of short stock like chair seats, etc. Each clamp is provided with spring steel binder to hold down wide or thin stock, so it cannot buckle when clamped. Sizes: From 2 sections with 32 clamps to 12 sections with 192 clamps, or any desirable size. Floor space, 10 ft. x 12 ft. Height, 10 ft. Weight, 1 to 3 tons. Write us for further information.

Jackson, Cochrane & Company

KITCHENER - CANADA

The "Shimer Limited" Expansion Head

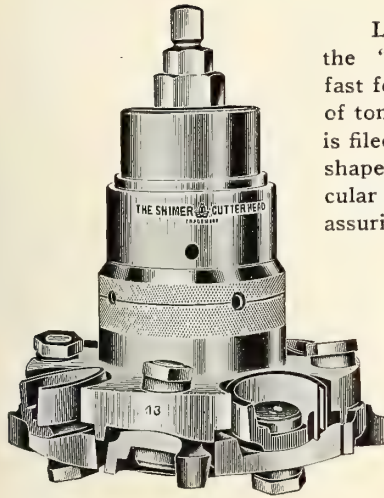


Fig. 627

Let us draw your attention to the advantages of using the "SHIMER CUTTER HEAD" for general Mill and fast feed Planer work. The Cutter is turned to cut the shape of tongue and groove desired, so that to sharpen the cutter it is filed or ground on its face, guaranteeing the user the same shape of cut during the life of the cutter. The bit being circular has from $3\frac{1}{2}$ in. to 5 in. cutting length to the cutter, assuring long wearing life to the cutters.

Note that the cutter, being fastened to a concave seat on a compound angle, assures the user of the proper clearance of cutters, consequently they never burn.

These heads are fitted with or without the Self-Centering Sleeve, and made Expansion or Solid, to suit the customer's wishes.

Shimer Heads have been in use for sixty years, and their reliability and reputation have spoken for them in the past. Let us know your wants and we will guarantee their reliability at the present.

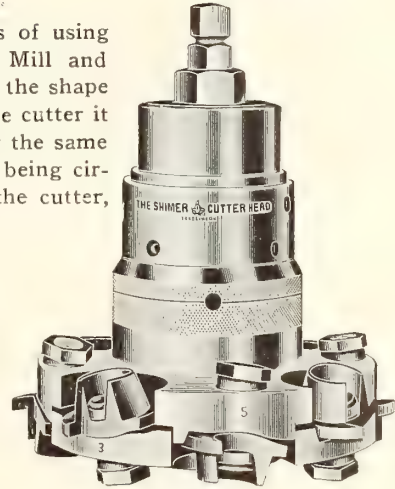


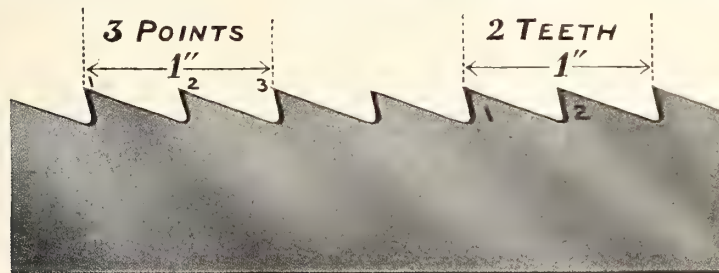
Fig. 268

SHIMER CUTTER HEAD CO. OF CANADA, LIMITED

Successors to Samuel J. Shimer & Sons, Inc.

GALT, ONTARIO

NARROW BAND SAWS



NOTE—When measuring points count the points at each end of inch, as per illustration. 3 points are to teeth, etc.

NARROW BAND SAWS ARE FURNISHED SET AND FILED, NOT BRAZED

Give full particulars when ordering.

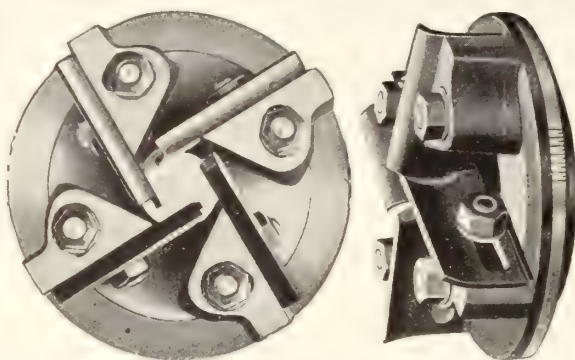
RADCLIFF Beaver Brand Narrow Band or Scroll Saws are Good Saws.

We use only best quality Swedish steel in their manufacture, evenly set and filed. They will give you real service under all conditions.

A trial order will convince you

Radcliff Saw Manufacturing Company, Limited

1550 Dundas Street St. West, TORONTO

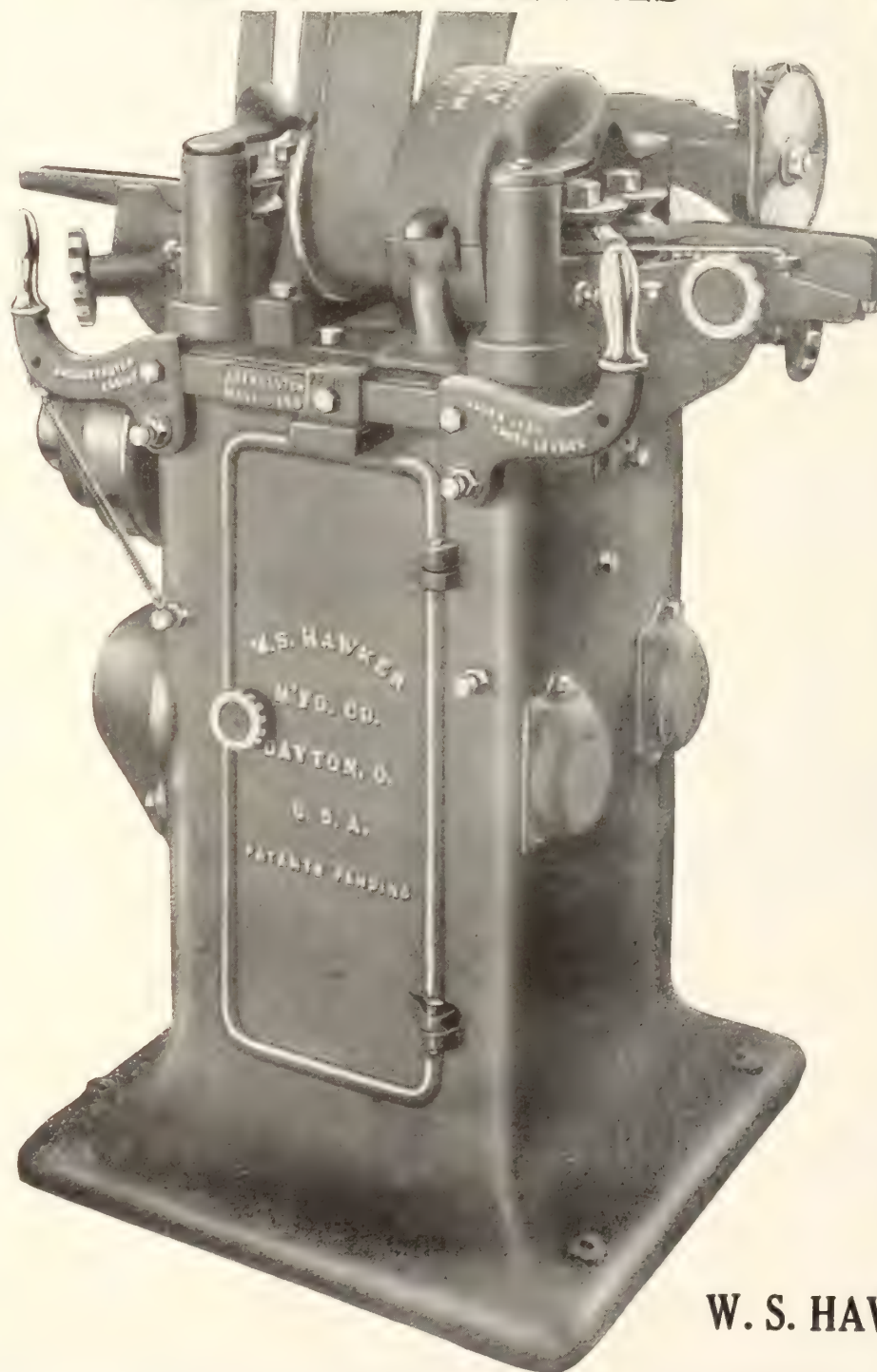


UNIVERSAL ADJUSTABLE CUTTER HEAD Patented.
Infringements (maker or user) will be vigorously prosecuted.

Two Heads

that have put
100% more profit
in the production
of Dowel Stock.

FOR SHIP TREENAILS



W. S. HAWKER.

Inventor and Designer of the World's most
efficient Tubular Turning Machinery

THE

Money Maker Adjustable Rod and Dowel Machine

The machine that is sent under a guarantee
to show you a gain of from 100 to 400 per cent.
before you buy it.

The improved dowel machine that 90 per
cent. of the largest and oldest machinery build-
ers and dealers now endorse and recommend in
preference to the solid chuck machines they
themselves previously built.

One cutter head turns from 1/4 in. to 2 in.
diameter.

Turns hard or soft wood equally well.

Handles heavy, oversized squares.

No choking of the cutter head.

Smooth stock.

Accurate sizes.

Works stock as short as five inches.

Rolls automatically centre variations in
squares.

Machines built to turn from 1/8 to 6 in.

We want to hear from every user of a solid
chuck dowel machine.

We can save you from one dollar out of
every two, to four out of every five, that the
operation of solid chuck machines costs you.

Engagements for competitive test solicited.
Formal orders not solicited. All sales made
after demonstration.

The only question is, are you willing to cut
cost of your dowel turning to one-half or one-
third of what it costs with any make of solid
chuck machine?

Machine delivers the goods before you buy.

State conditions of stock closely.

Special conditions require special equipment.

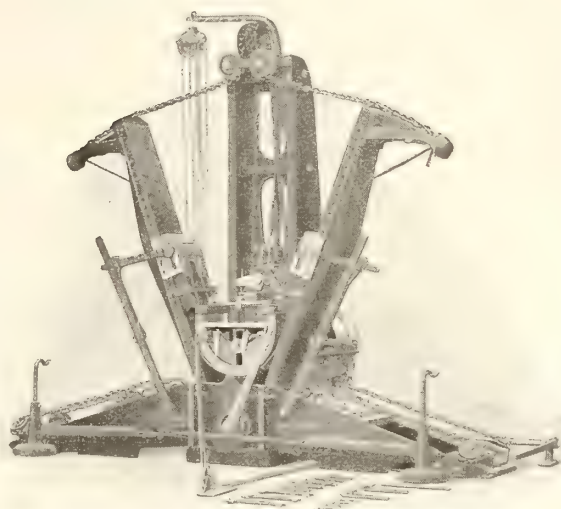
W. S. HAWKER MFG. COMPANY
DAYTON, OHIO.

Why Struggle Along Continually With Obsolete Wood Bending Methods

when a little time spent investigating Defiance bending machines would lead to the salvage of your present material wastage—increase your present output, and reduce losses in breakage to a minimum. Defiance bending machinery is serving wood benders everywhere throughout the world. Its success, so pronounced and so long continued, proves Defiance methods of wood bending the most correct in use today.

DEFIANCE HIGH PRODUCTIVE WOOD BENDING MACHINERY

is built in various designs and sizes, and particularly adapted to bending rims for artillery wheels, automobile, auto-truck, wagon and carriage wheels, table rims, plow and truck handles, hames, bows for vehicle tops, and steering wheel rims. For the complete manufacture of the foregoing products many of the largest manufacturers all over the world are using Defiance equipment—all of which is a proven success and high productive machinery.



12" Patent Rim, Felloe and Round Bending Machine

Illustrated and descriptive matter on your requirements in wood bending machinery will be mailed on request.

THE DEFIANCE MACHINE WORKS

New York City

DEFIANCE, OHIO, U.S.A.

London, England

You Have Paid for an Installation of Chapman Double Ball Bearings

in Your Factory over and
over again, BUT—

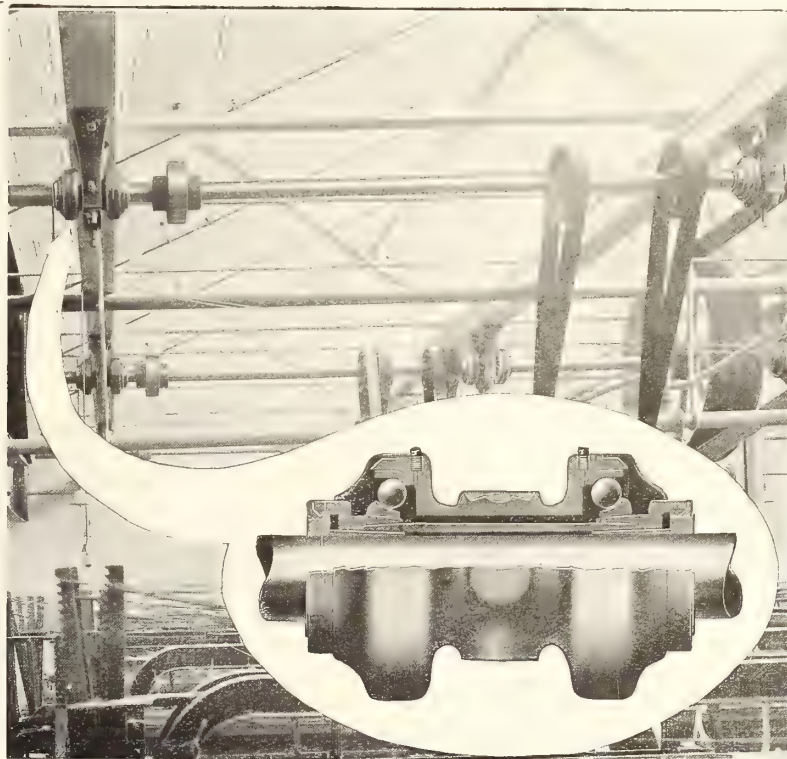
HAVE YOU GOT THEM?

Ordinary line shafting wastes 15 per cent. to 60 per cent. of power.

Line shafting equipped with Chapman Double Ball Bearings will eliminate about 75 per cent. of the friction, thus averaging a total saving of from 15 per cent. to 30 per cent.

Chapman Double Ball Bearings fit any adjustable hanger and require oiling and attention only once a year. No extra equipment required to install.

Send for Catalog No. 3 C.



The Chapman Double Ball Bearing Co. of Canada, Limited

Toronto

339-351 Sorauren Ave.

Ontario

American Branch: The Transmission Ball Bearing Co., Inc., 32 Wells St., Buffalo, N.Y.

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Band Saw 311

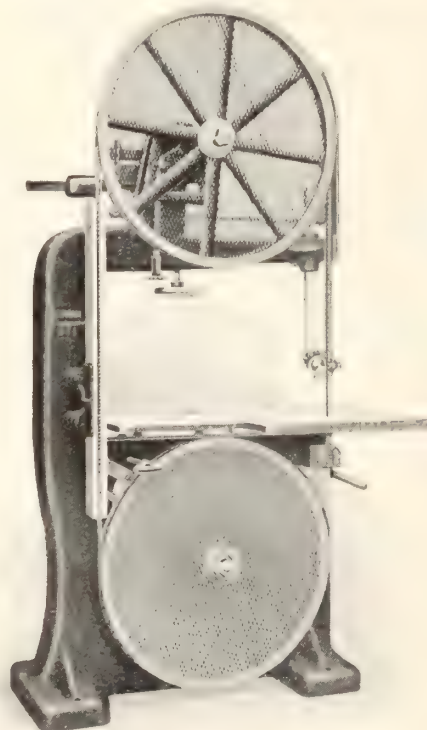
36" Wheels

Carries saws $\frac{1}{4}$ " to 2"

Circular Guards

Knife Edge Tension,
Tilting Table

Convenient for
Adjustment



Woodworking Machinery

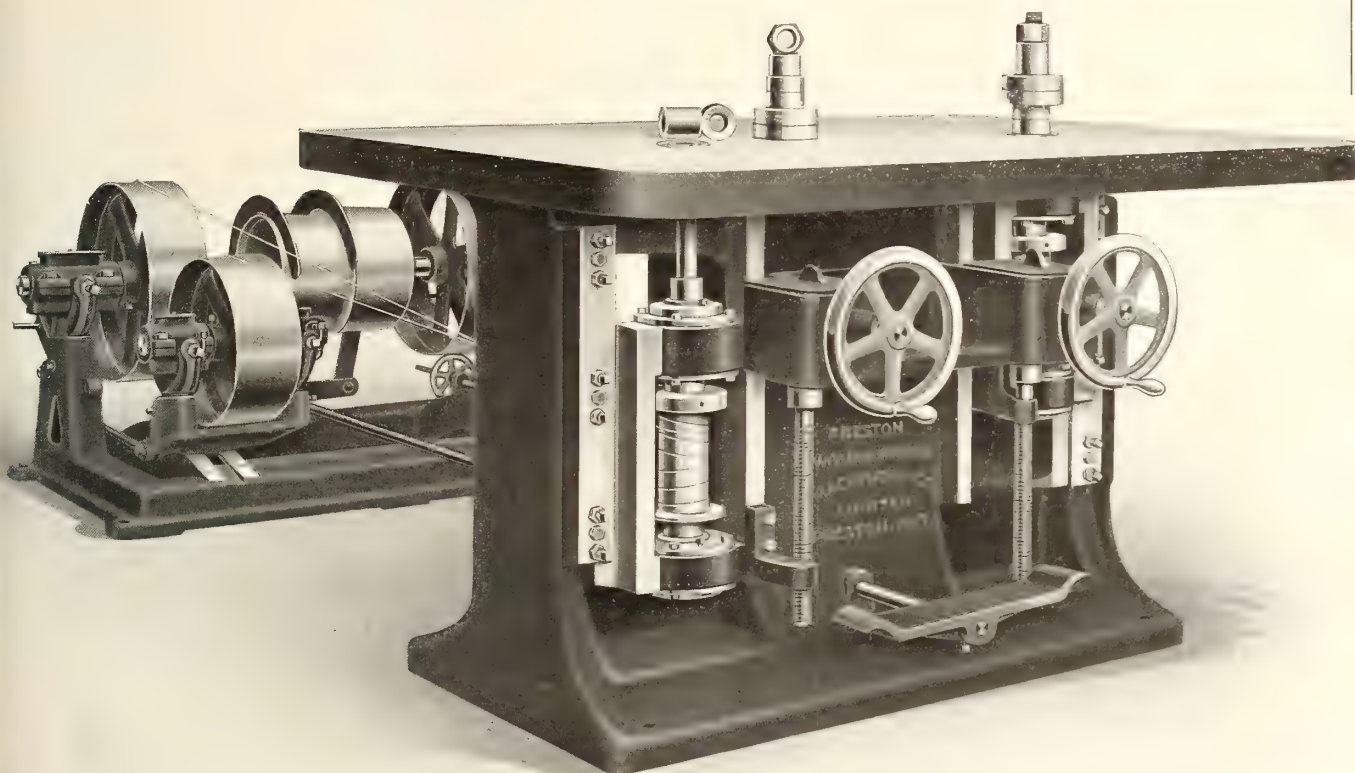
Planers and Matchers
Surfacers
Jointers
Moulders
Shapers
Tenoners
Mortisers
Borers
Relish, Mitre and Dado
Machines
Dowel Machines
Wood Lathes
Band Resaws
Band Saws
Circular Saws
Grinders
Sanders
Wiring Machines
Clamps
Veneer Presses

COWAN & CO. OF GALT LIMITED - Galt, Ontario

SAVE \$5.00 EVERY DAY

BY INSTALLING A

Preston High Speed Ball Bearing Shaper



IT WILL

1. **DOUBLE** your shaper production.
2. Pay for itself in 6 months.
3. Be much easier on your operator.

MORE PRODUCTION is the big cry in the world today
and **LABOR SAVING MACHINERY** is the only answer.

The Preston Woodworking Machinery Co.
Preston, Ontario, Canada Limited



DISSTON SAWS AND KNIVES

The installation of Disston Saws and Knives—made from the famous Disston Crucible Steel—means more and better work. In the shops where cutting cost and output are carefully checked and counterchecked you will usually find Disston equipment.



HENRY DISSTON & SONS LIMITED

TORONTO - CANADA

Branch: Vancouver, B. C.



M 76



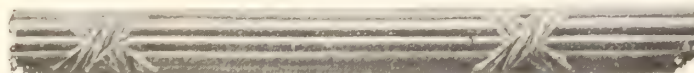
M 86



M 52



M 104



M 95

MOULDINGS We are making more Period Mouldings than ever before. Orders should be placed early to assure your supply when needed.

KNOBS The Period Knobs we placed on the market a few months ago are proving very popular. If you have not received samples ask for them now.

ROSETTES A new Period item to accompany the knobs.



OP8



OP5



OP6

Waddell Manufacturing Company

Coldbrook and Taylor, N. W.

Grand Rapids, Mich.

STUTZMAN ROUND SAFETY CYLINDER HEADS

**For Jointers, Buzz Planers, Moulders and Surfacers
The Knives Cut on Same Angle as Square Heads**

These heads are designed to meet the demand for cylinders small in diameter suited for Jointers or Pony Planers, where a well-balanced Round Safety Head is desired. They fill up the gap between the tables, so there is no danger to the operator. Very superior work is accomplished, too, aside from the safety feature.

The parts consist of the head and journal ends made in one piece, the ends of which are fitted with pulleys or one pulley, as required by the machine. The journals have a ground finish, insuring a smooth finish.

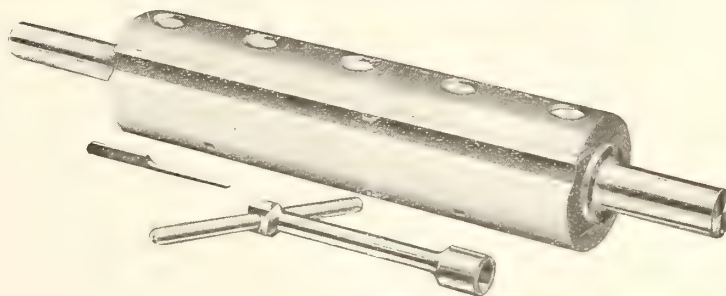
The knives are made of thin high-speed steel and clamped between self-centering caps.

The caps are drilled to admit a draft for setting the knives.

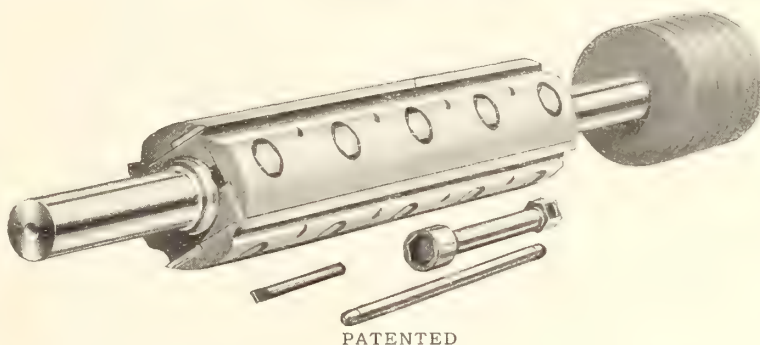
Knives are clamped from the heel of the cap to the front of knives, making it impossible for the chips to get under them.

Novelty knives can be attached to these two and four knife heads.

Gauge for setting knives, also wrench are furnished.



PATENTED



PATENTED

**Jointing Heads for Shapers
Shaper Guards**

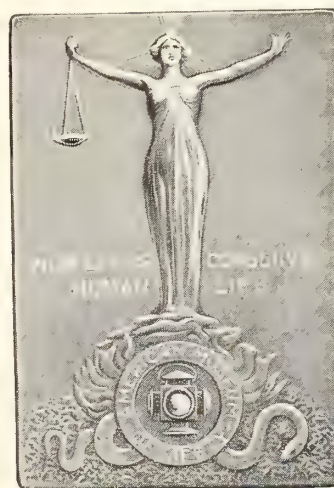
**Electric Grinders for Grinding Knives
without Removal from Machine**

ASK FOR CIRCULARS

Fischer Manufacturing Company
Williamsport, Pennsylvania



Certificate of Approval Awarded by State of Pennsylvania

Gold Medal Awarded 1914,
New York City

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Ready for Immediate Shipment

GUM		LA. CYPRESS		6/4 & 8/4 DOG BOARDS	
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22,859 "	4/4 No. 1 Com. and Sel. Red	28,725 "	4/4 Select	Cottonwood, 1,900 ft.	
11,167 "	4/4 No. 2 Com. Red	83,085 "	4/4 No. 1 Shop	RED OAK	
1,514 "	6/4 1st and 2ds Red	18,205 "	4/4 No. 2 Common	19,390 ft.	10/4 1st and 2ds Oak
3,126 "	6/4 No. 1 Com. & Sel. Red	47,635 "	4/4 Peckie	24,930 "	10/4 No. 1 Com. and Sel.
325 "	6/4 No. 2 Common Red	17,000 "	6/4 1st and 2ds	11,080 "	10/4 No. 2 Common
630 "	8/4 1st and 2ds Red	13,000 "	6/4 Select	83,455 "	4/4 1st and 2ds
1,615 "	8/4 No. 1 Com. and Selects Red	15,000 "	6/4 No. 2 Common	171,527 "	4/4 No. 1 Com. and Sel.
175 "	8/4 No. 2 Common Red	7,263 "	6/4 Peckie	20,180 "	4/4 No. 2 Com.
48,909 "	1 x 13-17" Box Boards	4,970 "	8/4 Select	16,450 "	4/4 No. 3 Common
30,000 "	1 x 9-12" Box Boards	11,550 "	8/4 No. 1 Shop	11,249 "	5/4 No. 1 Com. and Sel. Pl. Re
35,397 "	13" and up 1st and 2ds Sap	3,630 "	8/4 No. 1 Common	11,041 "	5/4 No. 1 Com. & Sel. Pl. Whit
426,440 "	4/4 No. 1 Com. and Sel. Sap	3,630 "	No. 2 Common	10,000 "	6/4 No. 1 Com. and Sel. Pl.
228,717 "	4/4 No. 2 Common Sap	2,250 "	8/4 Peckie	30% FAS, 70% White	
45,558 "	No. 3 Common Sap	ELM		24,196 "	4/4 No. 2 Com. and Btr. 8' Ti
13,000 "	5/4 No. 2 Common Sap	7,980 ft.	4/4 Log Run	Siding	
30,657 "	5/4 No. 3 Common Sap	320 "	5/4 "	13,425 "	3/4 No. 3 Com.
2,563 "	6/4 No. 1 Com. and Sel. Sap	28,168 "	6/4 "	10,503 "	1st and 2ds Qtd.
811 "	6/4 No. 2 Common	20,346 "	8/4 "	23,118 "	4/4 No. 1 Com. and Sel. Qtd.
150 "	6/4 No. 3 Common	3,080 "	10/4 "	2,429 "	4/4 No. 2 Common Qtd.
COTTONWOOD		2,560 "	12/4 "	1 car	4/4 1st and 2ds Qtd. White
2,763 ft.	4/4 1st and 2ds	120 "	4/4 No. 3 Common	1/2 car	4/4 No. 1 Com. and Sel. Qtd. White
15,000 "	1 x 6-12" and 13-17" FAS	80 "	5/4 "	LA. WHITE ASH	
7,000 "	1 x 9-12" Box Boards	5,167 "	6/4 "	3,355 ft.	4/4 No. 1 Common
4,000 "	1 x 13-17" Box Boards	1,264 "	8/4 "	16,272 "	5/4 No. 2
34,000 "	4/4 No. 1 Com. and Sel.	770 "	10/4 "	9,173 "	6/4 "
25,718 "	4/4 No. 2 Com.	610 "	12/4 "	3,850 "	8/4 "
YELLOW PINE—AIR DRIED		PECAN		1,540 "	4/4 No. 3
11,640 ft.	1 x 4 No. 1 and No. 2 Common	22,896 ft.	8/4 Log Run	51,584 "	5/4 "
7,100 "	1 x 4 and 1 x 6 No. 1 & 2 Com.	5,724 "	8/4 No. 3 Common	3,564 "	6/4 "
6,825 "	1 x 8 No. 1 & No. 2 Common			11,550 "	8/4 "
7,530 "	1 x 10 No. 1 and No. 2 Com.				

ABERDEEN LUMBER COMPANY
PITTSBURGH, PA.



We are in position to supply your entire needs

QUARTERED RED AND WHITE OAK

What are your requirements?

MEMPHIS BAND MILL COMPANY - Memphis, Tenn.



I offer the following West Virginia stock for immediate shipment :

100,000	Ft. 4/4	Sound Wormy Chestnut.
100,000	" 5/4	" " "
75,000	" 6/4	" " "
70,000	" 8/4	" " "

No. 1 Common and Better Chestnut

100,000	Ft. 4/4	
100,000	" 6/4	
100,000	" 8/4	60% 14 and 16 feet long, 50 to 60% 10" and wider.
15,000	" 4/4	FAS Plain White Oak.
75,000	" 4/4	No. 1 Com. Pln. Wh. Oak.
100,000	" 6/4	No. 1 Com. Pln. Wh. Oak.

I have also a car of 4/4 No. 1 C & B Tennessee Red Cedar in transit.

I can make immediate shipment of Crating Lumber, Excelsior and Wood Wool.

Write, Wire or Phone for Prices.

PERCY E. HEENEY

202 Weber Chambers, KITCHENER, ONT.

BLACK WALNUT

Large Stock ready for immediate shipment, also Well Assorted Stocks at our Yards and Mills

in West Virginia and Kentucky

O A K

Maple, Hickory, Chestnut
Basswood and Poplar

Prices and stock list on request

Burns & Knapp

Lumber Company
CONNEAUTVILLE, PA.

Dry Spruce and Birch

Good Stocks, Prompt Shipments, Satisfaction

C. A. SPENCER, Limited

Wholesale Dealers in Rough and Dressed Lumber

Offices—500 McGill Building
MONTREAL - - - Quebec

POPLAR GUM BIRCH

For prompt shipment we carry in stock large quantities of Rotary Cut, Sliced and Sawed Veneers and Southern Hardwood Lumber.

Send us your inquiries—our prices and service will insure future business.

Christmann Veneer & Lumber Co.

3750 N. Second St., St. Louis, Mo.

MAHOGANY WALNUT OAK

F. T. DOOLEY, President.

T. E. JONES, Secy.-Treas.

F. T. Dooley Lumber Co.
Inc.

MANUFACTURERS and WHOLESALERS
of

SOUTHERN HARDWOODS

Plain and Quartered Oak
Cypress, Gum, Ash
Soft Maple and Elm

Send us your inquiries

Memphis ∴ ∴ Tennessee

Hardwoods

We can furnish you immediately Factory Stock including all grades and thicknesses of

Walnut, Chestnut
Mahogany, Teak, Oak
Ash, Cypress

ALSO

VENEERS

Oak, Maple, Walnut and
other Fancy Woods

The McLennan Lumber Co.

Limited

MONTREAL

American Hardwood Lumber Co.

St. Louis, Mo.

Large stock of—

**Dry Ash, Quartered Oak
Plain Oak and Gum**

Shipments from — NASHVILLE, Tenn.,
NEW ORLEANS, La., and BENTON, Ark.

Aromatic Tennessee Red Cedar

CAR LOAD LOTS
OR LESS

Earthman Lumber Co.
Murfreesboro, Tenn.

Indiana

Quartered Red and White

OAK

1,000,000 feet of dry stock carried
at all times

ALSO PLAIN OAK AND ASH

We manufacture all stock carried

Evansville Band Mill Co.

FRANK M. CUTSINGER, Pres.
GEO. H. FOOTE, Vice-Pres. & Treas.
JOSEPH WALTMAN, Secretary

Mills at EVANSVILLE, Indiana

SPECIALS!

For Immediate Shipment

QUARTERED RED GUM

10 cars 2" 1s and 2s.
5 " 2½" Common and Better.
5 " 3" Common and Better.

PLAIN SAWED RED GUM

5 cars 2½" Common and Better.
5 " 3" Common and Better.
4 " 1½" 1s and 2s.
5 " 1" Common.
10 " 1¼" Common.

QUARTERED SAWED WHITE OAK

10 cars 1" No. 1 Common and Better.

Thomas & Proetz Lumber Company

No. 3400 Hall St. St. Louis, Mo.

Perfection in Quality and Service

Service that is prompt and accurate is a big factor in our dealings and at the same time the acme of quality always prevails. We make a specialty of supplying Sap, Red Gum, Crating and Southern Hardwoods. Let us know your requirements in factory stock including all grades and thicknesses of Cypress, Sap, Red Tupelo and Black Gum, Cottonwood, Oak, Elm, Sycamore and Ash. We can ship immediately on receipt of your order.

Cornelius Lumber Company
ST. LOUIS, Mo., U. S. A.

ATTENTION:

"Auto Body and Furn. Manfgs."

We are one of the few firms
in the country handling

White Ash Exclusively

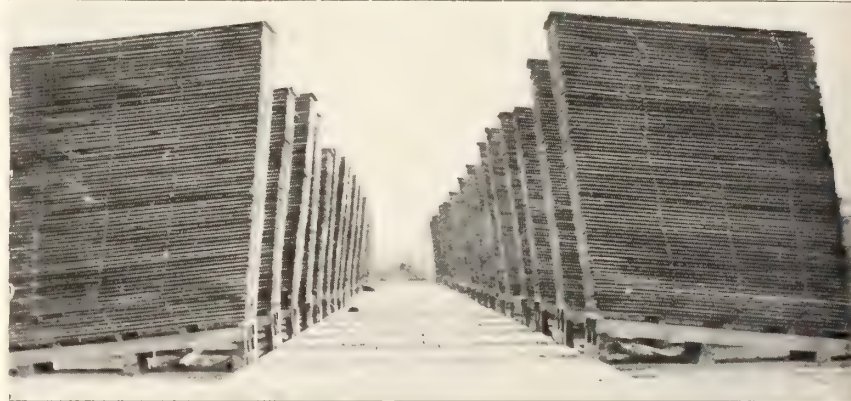
We sort it to meet all requirements. Tough texture and Medium texture. Can furnish Special Widths and Lengths one to four inches thick. Write or wire when needing WHITE ASH.

THOMPSON, KATZ LUMBER CO.

Memphis, Tenn.

Cable Address "TomKats"

Two Conclusive Proofs Why You Should Buy Your Lumber From Us



Examine closely the picture above, then read the following letter we received a few days ago from one of the largest manufacturers of Mouldings in the world. (Lumber for Mouldings must be absolutely flat and straight.)

"We have been using exclusively gum lumber, both sap and red, shipped by you for the last three years, and have been well pleased with its character, both as to grade and condition. The condition of same being an evidence of careful handling before shipping. We have been well pleased with the transactions which we have had with you, and will endeavor to continue using your stock as long as available."

We also manufacture Oak, Ash, Elm, and Cypress at Louise, Miss., mills. Get our prices before placing your orders and become a SATISFIED user of Gum or one of the other Southern hardwoods.

BARR-HOLADAY LUMBER CO.
GREENFIELD - OHIO

Tennessee Scented Red Cedar

5 Cars 4/4 No. 1 Common and Better at our Knoxville Mill now ready for shipment. Can saw other thicknesses to order. At this point we manufacture our famous Knoxville Quartered White Oak, and can make direct mill shipment in solid or mixed cars of the following woods :

Yellow Poplar, Plain Red and White Oak,
Quartered White Oak, Wormy Chestnut,
Scented Red Cedar

THE ATLANTIC LUMBER CO.
310 Manning Chambers, TORONTO

Mills: KNOXVILLE, Tenn. ; FONDE, Ky.

Yards : BUFFALO, N.Y.



Band Mill and Yards, Memphis Plant

We manufacture all the lumber we ship and operate two band mills on our own timber, which enables us to ship stock of even grade, color, and texture.

We carry a large and well assorted stock of Southern Hardwoods at all times.

Gum Plain and Quartered Red
Ash, all thicknesses
Yellow Cypress
Oak Quartered White and Red
Sap Gum, Plain and Quartered
Oak Plain White and Red

We will cheerfully quote on your requirements.

"DIRECT FROM PRODUCER TO CONSUMER"

GAYOSO LUMBER COMPANY

Florida and Fay Avenue - - - - - MEMPHIS, TENNESSEE



BELLGRADE LUMBER CO.

MEMPHIS, TENN.

Manufacturers of High Class

Southern Hardwoods

Band Mills at — ISOLA, MISSISSIPPI. LOUISE, MISSISSIPPI AND CARY, MISSISSIPPI

We offer for immediate shipment and subject to prior sale the following desirable dry stock from our own mills

QUARTERED WHITE OAK 4,500' 4/4" 1s and 2s (dry).	QUARTERED RED GUM 50,000' 4/4" No. 1 Common. 30,000' 5/4" No. 1 Common. 5,000' 6/4" No. 1 Common. 3,000' 8/4" No. 1 Common. 2,000' 10/4" No. 1 Common.	12,000' 8 1/4" No. 1 Com. & Btr. 25,000' 10/4" No. 1 Com. & Btr. 15,000' 12/4" No. 1 Com. & Btr.	PLAIN SAP GUM 15,000' 4/4" 1s and 2s. 5,000' 5/4" 1s and 2s. 5,000' 6/4" 1s and 2s. 6,000' 8/4" 1s and 2s.
PLAIN WHITE OAK 6,000' 4/4" 1s and 2s.	QUARTERED RED GUM Sap No Defect. 15,000' 5/4" No. 1 Com. & Btr.	PLAIN RED GUM 20,000' 4/4" No. 1 Common. 30,000' 5/4" No. 1 Common. 3,000' 6/4" No. 1 Common. 2,000' 8/4" No. 1 Common.	30,000' 4/4" No. 1 Common 20,000' 5/4" No. 1 Common 5,000' 6/4" No. 1 Common 5,000' 8/4" No. 1 Common
PLAIN RED OAK 25,000' 4/4" 1s and 2s. 45,000' 4/4" No. 1 Common.			

Your inquiries by wire will have prompt and careful attention

"AMERICA'S FINEST CABINET WOOD"

RED GUM

furniture "has come into its own at last." Whereas a few short years ago the alert furniture manufacturer (and dealer), with a finger on the public pulse, showed RED GUM only when it was insisted upon, and then with a half-apologetic manner, HE NOW SAYS: "COME RIGHT UP HERE IN FRONT — I WANT TO SHOW YOU MY RED GUM LINES." (Proud of it — and well he may be.)

WHY DON'T YOU, MR. FURNITURE MAKER, GET YOUR RED GUM LINE INTO THE SPOTLIGHT OF POPULAR FAVOR?

There's a lot of honorable profit in meeting public taste. Do you realize what our advertising to the general public (the real market) is doing for manufacturers who feature GUM? "Come on in — the selling's fine" with "America's Finest Cabinet Wood."

WRITE US FOR SAMPLES, PARTICULARS AND GENERAL INFORMATION. OUR REPLY WILL BE PROMPT, PERSONAL AND DEPENDABLE.

GUM LUMBER MANUFACTURERS' ASS'N

1314 Bank of Commerce Building, Memphis, Tennessee

50,000' 1" Dry Canadian Red Oak

35,000' 1 1/2" & 2" " " "

50,000' 1" Dry Canadian Beech

All thicknesses in

Dry Birch and Basswood

Edward Clark & Sons, Ltd.
807-9 Bank of Hamilton Bldg., Toronto

For QUICK DELIVERY —Partial List of Stock

THE following list represents part of our hard-stock at the Railroad, ready for prompt shipment. For delivered prices or other items merely send an inquiry—but act at once.

ASH			PLAIN OAK		
1"	FAS No. 1 & 2 Com.	48,168	1"	FAS & No. 1 Com...	68,498
1 1/2"	FAS No. 1 & 2 Com.	51,478	2"	FAS & No. 1 Com...	280,860
2"	FAS & No. 1 Com...	70,962	2 1/2"	FAS No. 1 Com...	320,800
2 1/2"	FAS & No. 1 Com...	18,312	3"	FAS No. 1 Com...	167,151
4"	FAS & No. 1 Com...	8,048	4"	FAS No. 1 Com...	59,338
3"	FAS & No. 1 Com...	900			
ELM (Soft)			QUARTERED OAK		
5/8"	FAS No. 1 & 2 Com.	16,400	1"	FAS & No. 1 Com...	20,709
1"	FAS No. 1 & 2 Com.	13,400			
1 1/2"	FAS & No. 1 Com...	24,291	RED GUM		
2"	FAS No. 1 Com. . .	37,558	1"	FAS & No. 1 Com...	2,500
2 1/2"	FAS No. 1 Com. . .	97,400	SAP GUM		
3"	FAS No. 1 Com. . .	58,168	1"	FAS No. 1 & 2 Com.	33,065
POPLAR			SYCAMORE		
1"	FAS No. 1 & 2 Com.	14,275	3"	FAS No. 1 & 2 Com.	29,758
1 1/4"	FAS No. 1 & 2 Com.	5,600	WALNUT		
2"	FAS No. 1 & 2 Com.	18,430	1"	FAS No. 1 & 2 Com.	10,000
2 1/2"	FAS No. 1 & 2 Com.	29,525			

Hardwood of Quality Service—The Best

John I. Shafer Hardwood Co.
SOUTH BEND INDIANA

**H. W. Darby Hardwood
Lumber Company**

Manufacturers of

Hardwood Lumber

Red and Sap Gum a Specialty

Gum, Oak, Tupelo, Poplar
Ash, Elm, Cypress

Rooms 1531-33 Bank of Commerce & Trust Bldg
MEMPHIS, TENN.

Mills at :

Sidon, Miss. Money, Miss.
Greenwood Miss.

HUNT, WASHINGTON & SMITH

Nashville, Tennessee

Manufacturers of

Quartered and Plain White Oak

Poplar - Ash - Chestnut

Tennessee Red Cedar

Gum and Cypress

Canadian Representative

W. R. YOUmans

Parkview Hotel

Toronto, Ontario

The Hotel Pennsylvania Used Walnut

They selected American Walnut because they believed it to be the most practical and yet the most distinctive wood obtainable. Later they confirmed their own judgement by consulting the preferences of the public they serve. The management in a recent statement say :-

“ The fact that we have chosen Walnut as a furniture wood and for the interior trim for the largest hotel in the world, and a hotel which is designed for New York's most discriminating hotel patrons, speaks for itself. Could we say more.”

Use Walnut for all furniture and interior trim and especially insist upon the Iowa variety in both lumber and veneers.

Des Moines Sawmill
Company, Inc.

Des Moines, Iowa



AMERICAN WALNUT

for Quality Products



American walnut is the only cabinet wood in the world market today on which the manufacturer can get prompt shipments of dry stock in all grades and thicknesses, and at reasonable prices.

In addition to the above unusual considerations, American Walnut is in a class by itself when it comes to universal appreciation of its superiority.

*Write for our Walnut Booklet which will be out Soon
It is interesting - and costs you nothing.*

American Walnut Manufacturers' Association
Room 425, 115 Broadway, New York.

St. Francis Basin Hardwoods

Tennessee Aromatic Red Cedar

STOCK AVAILABLE FOR PROMPT SHIPMENT
DELIVERED PRICES CHEERFULLY FURNISHED

SAP GUM

4/4"	Common & Better Qtd.	100,000'
6/4	" " " "	20,000
8/4	" " " "	4,000
4/4	1s and 2d—18" and up—Plain	50,000
4/4	Box Boards, 13/17"	100,000
4/4	" " 9/12"	50,000
4/4	1s and 2d 13/17"	100,000
4/4	1s and 2d—6" up	25,000
4/4	No. 1, 2 and 3 Common	300,000
5/4	" " " "	18,000
6/4	" " " "	300,000
8/4	No. 2 and 3 Common	25,000

PLAIN RED GUM

4/4"	1s and 2d	30,000'
4/4	No. 1 Common	150,000
4/4	No. 2	25,000
5/4	No. 1	2,000
6/4	No. 1 Common and Better	15,000
6/4	No. 2 Common	15,000

QUARTERED RED GUM

3/4"	Common and Better	2,000'
4/4	1s and 2d	60,000
5/4	No. 1 Common	3,000
6/4	No. 1 Common	18,000
8/4	1s and 2d	50,000
8/4	No. 1 Common	75,000
10/4	Common & Better	5,000
12/4	Common & Better	23,000

FIGURED RED GUM

4/4"	1s and 2d Plain	20,000'
4/4	No. 1 Common Plain	20,000
6/4	Common and Better Plain	10,000
4/4	No. 1 Common Qtd.	20,000
8/4	1s and 2d Qtd.	5,000
10/4	" " "	11,000
12/4	" " "	2,500

MISCELLANEOUS

4/4"	Shop and Btr. Cypress	20,000'
4/4	No. 3 Ash	1,000
5/4	" " "	9,000
6/4	" " "	5,000
4/4	Log Run Cottonwood	2,500
4/4	Mill Run Persimmon	8,000
6/4	Log Run Hackberry	7,000
6/4	No. 3 Pecan	40,000
8/4	" " "	5,000

PLAIN RED OAK

3/4"	No. 1 Common and Better	700'
4/4	1s and 2d	19,000
4/4	No. 1 Common	70,000
6/4	" " "	30,000
6/4	No. 2	7,000
8/4	No. 1	14,000
8/4	No. 2	4,000

QUARTERED RED OAK

4/4	No. 2 Common	12,000'
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PLAIN WHITE OAK

4/4"	1s and 2d	75,000'
4/4	No. 1 Common	200,000
6/4	No. 2 Common	33,000
10/4	Common and Better	20,000
12/4	Common and Better	13,000

QUARTERED WHITE OAK

3/4"	Common and Better	300'
4/4	1s and 2d	12,000
4/4	No. 1 Common	12,000
4/4	No. 2 Common	4,000
6/4	No. 1 Common and Better	4,000

MISCELLANEOUS OAK

4/4"	Sound Wormy	10,000'
4/4	No. 3 Common	75,000
5/4	" " "	7,000

SOFT ELM

4/4"	Log Run	150,000'
5/4	" " "	200,000
6/4	" " "	150,000
8/4	" " "	60,000
10/4	" " "	50,000
4/4	No. 3 Common	100,000
5/4	" " "	3,000
6/4	" " "	80,000
8/4	No. 2 and 3 Common	16,000
(Elm Cut to Special Order)		

SOFT MAPLE

6/4"	" " "	3,500'
12/4	" " "	4,500

Tennessee Aromatic Red Cedar in straight carlots or mixed with hardwoods.
Red Cedar Fence Posts carlots at attractive prices. Prompt,
courteous and efficient service at all times—Try us.

GEO. C. BROWN & COMPANY

Band Mills, Proctor, Ark. and Cosgrove, Ark. Main Office, Memphis, Tenn.

Canadian Representative: M. E. Cummings, 814 Richmond Ave., Buffalo, N. Y.

Here's a Suggestion

Did you ever try keeping a file of your back copies of the "Canadian Woodworker"? Try it. Start with this issue. There are many articles that are worth keeping, as they offer valuable suggestions that will help you in your business.

Wayne Lumber Co.

Manufacturers & Wholesalers

MILLS: NEW YORK and CANADA

Basswood
Beech
Chestnut

BEAUTIFUL
BIRCH

Oak
Poplar
Ash

BIRCH AND MAPLE

OUR SPECIALTY

Get Our Prices on Box Lumber

110 West 40th St., New York City

Canadian Representative:

D. COTE,

703a Champagneur, Outremont, Montreal, PQ.

Stock of Black Walnut Lumber

Over 2 Million Feet Ready for Prompt Shipment

October 1, 1919

Thickness	1sts & 2nds 6-10"	1sts & 2nds 10-14"	1sts & 2nds 14" and up	1sts & 2nds 6-7 ft.	1sts & 2nds 4-5½ ft.	No. 1 Selects	No. 1 Common	No. 2 Common	Clear Strips
3/8 inch	4000			1700			4100		
1/2 inch	79800	38500		3400		3400	36900	65100	
5/8 inch	42900	16800		400		4000	54900	43100	
3/4 inch	94800	27300		1900		5100	22400	29800	
4/4 inch	130200	58100	2800	40400		45700	277400	357800	2000
5/4 inch	57500	16500		5600	500	900	27800	38700	3600
6/4 inch	41000	6300		2400	200	600	7300	78200	2500
8/4 inch	93100	22100		7900	100	15100	105000	55000	5900
10/4 inch	10500			500		4500	42400	10300	
12/4 inch	8800					200	8900	7300	
16.4 inch	3700						800	2500	

We also carry in stock Mexican Mahogany, White Ash,
Cherry and Plain and Quartered White Oak

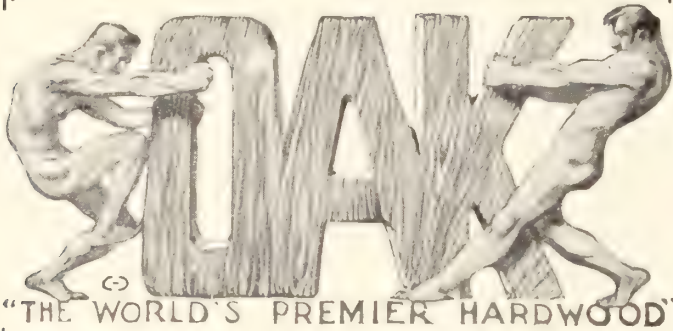
The Kosse, Shoe & Schleyer Company

Eastern Branch
Baltimore, Md.

325 Powers Theater Bldg.,
Grand Rapids, Mich.

Main Office and Band Mill
Cincinnati, O.

**"YES!" IS THE WORD FOR
AMERICAN OAK TODAY!**



**to ALERT FURNITURE MAKERS:
"A WHISPER IS ENOUGH"**

From FILING CABINETS and other Office Furniture to "the bones of great ships"—OAK is **OAK**. (Supreme.)

From **DELICATELY CARVED FURNITURE** for the **DILETTANTE TASTE** to the sills and ribs of great structures whose nobility is in their sheer strength (and to the historic beams of Westminster Abbey) OAK is **OAK**. (Supreme.) **GOOD OAK FURNITURE** is **"COMING IN."**

Without a rival, without an apology, without a substitute, OAK is indeed

**"The WORLD'S
PREMIER HARDWOOD"**

(has been, is and ever shall be), AND EVERYBODY KNOWS IT.

Nature will never grow another wood as good as OAK for the uses for which it is historically appropriate.

No need to mention Economy—you know it.

**AMERICAN OAK is PLENTIFUL,
ECONOMICAL, INDISPENSABLE.**

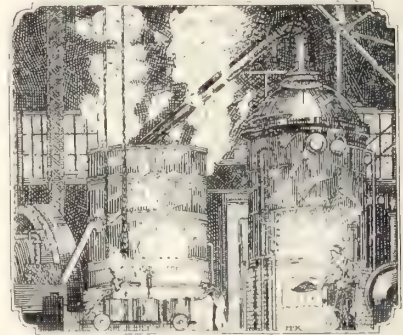
**ADMIRE IT. TRUST IT. INSIST ON IT.
SPECIFY IT. USE IT. WRITE us. TELL us.
ASK us. We will give you a Straight Personal Letter in
prompt reply—WITH ALL THE FACTS.**

Address: Oak Division,

AMERICAN HARDWOOD MFRS. ASSOCIATION
1408 BANK OF COMMERCE BLDG., MEMPHIS, TENNESSEE

Wood Turpentine

(MADE IN CANADA)



THE Canadian Wood Turpentine—made at our mills at La Tuque, P.Q., is an excellent diluent and solvent and contains no free rosin.

This Turpentine is made by an improved laboratory process from Canadian woods and its distinctive odor clearly indicates that it is a different product from that given by the older methods of distillation.

*Further and complete information
gladly sent upon request.*



**BROWN
CORPORATION**

Sales Office:

56 St. Peter Street
Quebec, P.Q.

Hardwood Dowels

Plain, Straight and Spiral Grooved



"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co. Limited

ORILLIA ONTARIO

Sawmills at Zebra and Orillia, Ont.
Cable Address: "Special," Orillia, Can.

Holly Ridge Lumber Co.

Incorporated

MAIN OFFICE
LOUISVILLE, KY.

This Company markets only the products of its own Band Mills located at

HOLLY RIDGE, LA.
MONROE, LA.
MEEKER, LA.
ST. LANDRY, LA.

These mills are sawing logs removed from the lands of this Company, owned by it in fee simple.

It is our policy to make high grades and to ship our customers exactly what they buy, and in no instance do we mix the grade.

These mills are producing Gum, Ash, Elm, Oak and Cypress.

A consumer placing business in the hands of this Company is assured of having direct shipments from the producer to the consumer, and that the business will be conducted on a high plane in every respect.

BRANCH OFFICES

KANSAS CITY, MO.

Geo. H. Temple, Mgr. 204 R. A. Long Bldg.

GRAND RAPIDS, MICH.

Howard A. Shead, Mgr., 601 Grand Rapids Bank Bldg.

J. H. Bonner & Sons

Memphis, Tenn.

Mills:

Jonquil and Ruffwood, Ark.

Manufacturers

Band Sawn Hardwood Lumber

Write or wire for prices on
Gum, Oak, Elm, Etc.

Southern Hardwoods

Our mills now producing high grade stock, well manufactured, including:

Poplar, Chestnut, Basswood
Buckeye, Hickory, Red and
Sap Gum, Plain and Quartered Red and White Oak.

Agricultural and other special purpose stock, Oak Planking, Railway Material, Heavy Timbers, in fact almost anything in the line of Hardwood Lumber.

Buskirk-Rutledge Lumber Co.
Cincinnati, Ohio.

OAK

Plain and Quartered
Uniform Color—Soft Texture

Poplar, Ash and other Hardwoods

We have 35,000,000 feet dry
stock—all of our own manu-
facture, from our own timber
grown in Eastern Kentucky

Prompt Shipments

The **Mowbray & Robinson Co.**
(INCORPORATED)

Manufacturers

Office: CINCINNATI, OHIO

MILLS

Quicksand, Ky.; Viper, Ky.; West Irvine, Ky.

Canadian Representative :

M. E. CUMMINGS, 814 Richmond Ave., Buffalo N. Y.

The Hyde Lumber Co.

Band Mills : LAKE PROVIDENCE LA.

Southern Office : MEMPHIS, TENN.

Bank of Commerce Bldg.

Northern Office : SOUTH BEND, IND.

MANUFACTURERS

Plain Red Gum

Quartered Red Gum

Plain Sap Gum

Quartered Sap Gum

Cottonwood, Cypress

Tupelo, Ash, Elm, Oak

CHARLES O. MAUS

Canadian Representative

The Largest Table Company
In The World

The Imperial Furniture Co.

Grand Rapids

are replacing their Dry Kilns
by a battery of up-to-date

GRAND RAPIDS VAPOR KILNS

Grand Rapids Veneer Works

Grand Rapids, Mich.

Seattle, Wash.

American Walnut

Our large supply of well selected logs makes it possible to produce and maintain an abundant stock of high grade walnut lumber.



A part of our log supply being cared for in a pond of water.
The picture shows surface of pond.

**All Grades and Thicknesses.
American Walnut Exclusively.**

Pickrel Walnut Company
St. Louis, Missouri

Red Gum Sap Gum Oak Tupelo

We carry a well assorted stock ready for immediate shipment of all Southern Hardwoods. Make a specialty of loading mixed cars of various grades and thicknesses for the factory trade. We issue a monthly stock sheet showing at a glance delivered prices on everything we have ready for shipment. If you are not receiving these lists, please write us.

P. J. Lawrence Lumber Co.

Sales Office

Syndicate Trust Bldg. St. Louis, Mo., U.S.A.

Quality First—Service Always

Our lumber is second to none when it comes to high grade, good figure and texture and excellency in manufacture.

We offer the following items, thoroughly dry, on which we can make immediate shipment.

ASH		POPLAR	
6,000'	4 1/4" 1s and 2s	10,000'	4 1/4" 1s & 2s SND 12"
5,000'	5 1/4" 1s and 2s		& up
4,000'	6 1/4" No. 2 Common	9,000'	4 1/4" Box boards, 13-17"
		16,000'	5 1/4" No. 2-B Common
PLAIN RED OAK		QTD. SYCAMORE	
15,000'	4 1/4" 1s and 2s	3,600'	4 1/4" 1s & 2s
5,000'	6 1/4" 1s and 2s	3,600'	4 1/4" 1s & 2s, 12" & up
25,000'	4 1/4" No. 1 Common	7,500'	5 1/4" 1s & 2s
11,000'	6 1/4" No. 1 Common	4,000'	5 1/4" 1s & 2s, 10" & up
PLAIN WHITE OAK		11,000'	4 1/4" No. 1 Common
7,500'	8 1/4" 1s and 2s	5,100'	5 1/4" No. 1 Common
10,000'	5 1/4" No. 1 Common		
4,500'	8 1/4" No. 1 Common		
QTD. RED OAK		WALNUT	
10,000'	4 1/4" 1s and 2s	4,000'	5 1/4" 1s & 2s
14,000'	4 1/4" 1s and 2s, 10" & up	14,000'	4 1/4" 1s & 2s
		7,000'	4 1/4" 1s & 2s, 8" & up
		5,000'	8 1/4" 1s & 2s
		16,000'	5 1/4" No. 1 Common
QTD. WHITE OAK		15,000'	4 1/4" No. 1 Common
9,000'	6 1/4" 1s & 2s	12,000'	5 1/4" No. 1 Common
4,000'	8 1/4" 1s & 2s	15,000'	6 1/4" No. 1 Common
8,200'	4 1/4" Selects, 6" & up, 8" & up	60,000'	4 1/4" No. 2 Common
		7,000'	5 1/4" No. 2 Common
9,000'	5 1/8" No. 1 Com. & Btr.	5,000'	6 1/4" No. 2 Common
30,000'	1 1/4" No. 1 Common		
10,000'	4 1/4" No. 1 Com. 10" up	5,300'	9 1/4" No. 1 Com. & Btr.
12,000'	5 1/4" No. 1 Common	16,200'	10 1/4" No. 1 Com. & Btr.
8,000'	8 1/4" No. 1 Common	12,000'	12 1/4" No. 1 Com. & Btr.
		MIXED OAK	
		5,300'	9 1/4" No. 1 Com. & Btr.
		16,200'	10 1/4" No. 1 Com. & Btr.
		12,000'	12 1/4" No. 1 Com. & Btr.

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- 2 cars 6/4 FAS Plain Red Oak.
- 2 cars 6/4 No. 1 Com. Plain Red Oak.
- 1 car 8/4 FAS Plain Red Oak.
- 1 car 8/4 No. 1 Com. Plain Red Oak.
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Toronto, October, 1919

No. 10

Constructing Wooden Houses in Britain

The urgent need for housing accommodation in Great Britain is opening up a new field for the Canadian woodworking industry. Judging from the reports appearing in the English press there exists an absolute famine in houses, and overcrowding, with its attendant evils, is rife. In consequence, there has been a strong agitation in favor of the construction of a cheaper type of dwelling, one that can be built with greater rapidity.

Owing to the strict provisions of the different housing and health laws it has not hitherto been possible to erect houses of wood. The Ministry of Health, which has been opposed to the construction of wooden dwellings, has at last given in and steps have been taken which will permit this type of building being erected regardless of the various existing local building laws. The Ministry has issued regulations governing the erection of these homes, which call for weatherproof walls, fireproof roofs and damp proof floors.

It is very gratifying to learn that Canada has acted with foresight and that strong efforts have been made to secure a share of this business. This country has facilities for supplying thousands of these houses, and our workmen are experienced in making and erecting them. Wooden houses have given satisfaction under all kinds of conditions here, so there is every reason to suppose that they would prove just as satisfactory in Britain where the weather is not so severe, but where the atmosphere contains more moisture.

We understand that negotiations are under way with a view to substantial orders for houses being placed in Canada. It is to be hoped, however, that

there will be no repetition of the experience of the Canadian Timber Products Association which recently lost a very large order for portable houses from France, owing to the prohibitive freight rates asked by the different steamship lines. Belgium, France, and some of the Mediterranean countries have also been making enquiries for suitable types of houses.

Loyalty and Co-operation Must be Secured

The woodworkers employed in the different factories in Stratford recently served an ultimatum on their employers demanding increased pay, shorter hours and recognition of their union. It was only a short while ago that a Board of Conciliation investigated the claims of the Stratford woodworkers, and made an award that was supposedly satisfactory to the men, and which was put into force by the different firms concerned. Now we find the men dissatisfied, discontented and asking for increased remuneration.

Many American industrial concerns which have been faced with a similar situation seem to have solved the problem by adopting some form of profit-sharing. Some of these schemes not only gave the workmen a share of any surplus profits that might be earned, but in many cases gave them an actual share in the management of the business itself. In this way they have secured the loyal co-operation of their employees, working conditions have been improved, the labor turnover reduced and instances have been found where the working hours have been cut down without in any way decreasing production.

Would some such scheme, if adopted, solve the labor question in our different woodworking plants? Elsewhere in this issue we publish an outline of the profit sharing scheme adopted by the Ideal Bedding Co., Limited, Toronto, also the description of an industrial democracy scheme which is worthy of the earnest consideration of all employers of labor and which in some modified form, might be adaptable to conditions which exist in Canada.

Canada—Good Country to do Business In

Reports recently issued tend to show that the business life of Canada is in an unusually sound and vigorous condition, the number of failures reported this year being the lowest on record. In 1918, out of the thousands and thousands of manufacturing and financial concerns, storekeepers and others doing business only 873 were forced to close their doors. In 1917 the number of failures reported was 1097. These are record-breaking figures and indicate a state of prosperity which has seldom if ever before been approached.

To find a year in which failures were as few as in 1918 it is necessary to go back 36 years, to 1882, when business concerns were considerably less than half as numerous as they are to-day.

Features Often Overlooked in Home Planning

Advance in Millwork Prices Comparatively Small—Factors which Govern Building Costs—Stock Material Most Economical—Unit System of Estimating

By W. H. Shaw

The housing of its people in a livable manner is one of the gravest problems which is now facing any community. A certain proportion of the people own a plot of ground and upon that they build such a home as they choose and are at the same time able to finance.

Many builders, in spite of the past busy season, figure that they will not have a reasonable profit at the end of the season, some place this partially to slow deliveries of mill supplies holding back, generally, progress on the building. While this might possibly be temporarily embarrassing to contracting firms by reason of withholding of process payments, it should not effect a wealthy building firm.

The primary factors in the troubles of firms suffering business loss at this time are three: First, failure on the part of those figuring jobs to discount the steadily rising prices of building material and labor. Second, under-estimating, and, third, taking business beyond the capacity of their resources through the process of "bunching."

Advance in Millwork Prices Small.

In a talk on present and prospective cost of building material and building constructed generally, a member of a large builders' supply house gave some interesting figures. From 1914 to the present time there has been an increase of 133 per cent. on coal, 350 per cent. on steel products, 100 per cent. on canned goods, 35 to 50 per cent. on all labor, 100 per cent. on woollens.

The gasoline for a fiver costs 70 to 100 per cent. more than it did when the millman retailed his stock doors at \$2 per. A dollar at market attracts about as much attention as a boy scout at an army mobilization camp. Still there is a panic because millmen and builders ask an increase of 30 to 40 per cent.

To the family that wants or needs a home and is able to finance it, the paramount question is this:

"Will we be able to build what we want for less money if we wait one, two or three years?"

Persons who have been seeking authoritative information as to what can be expected in building material prices for the next five years, assert with positiveness that pre-war prices on building materials will not be re-established for several years, if ever.

There is no safe ground for postponing home or other building in the hope of price reduction.

The demand for lumber and millwork for export to Europe should shortly begin and will probably have its effect on the situation in this country. In fact, the cost of construction is not high to-day—it is low compared with other commodities.

The Unit System of Estimating.

In no branch of building is the unit price more difficult of accurate assumption than in residence work. Not only is cost largely influenced by locality, including the local material market, wage scales, working hours and efficiency of mechanics, but it varies with the type of plan and design, while the character of construction and material remain unchanged.

If the cost be estimated according to cubage for a certain construction and finish it may be modified by percentage factors to determine roughly the cost of different material, workmanship, or equipment.

The larger and more elaborate the house, the more difficult it becomes to assume a cubic foot price. For the house of moderate cost, however, fairly trustworthy data can be given, remembering that they vary with locality, size and construction, and that the tendency of all forms of wood construction and wood finish is to gradually increase as our forests continue to dwindle.

Showing How Unit Works Out.

To illustrate the above. I give below date of seven houses built during 1914 when prices were

Cost Estimate of Seven Houses

Material and Labor	1	2	3	4	5	6	7
Excavation, at 30c cubic yard	\$ 55.00	\$ 63.00	\$ 47.00	\$ 68.00	\$ 48.00	\$ 70.00	\$ 85.00
Mason work, walls, etc.	180.00	190.00	175.00	208.00	200.00	225.00	240.00
Cement floors	36.00	40.00	30.00	51.00	32.00	60.00	165.00
Hollow tile walls	45.00	330.00	140.00	290.00	225.00	215.00	175.00
Chimney and brickwork	65.00	65.00	65.00	65.00	65.00	65.00	65.00
Tile work for roof	660.00	680.00	630.00	960.00	560.00	1050.00	535.00
Millwork	585.00	615.00	590.00	1060.00	600.00	1100.00	510.00
Carpenter labor	580.00	650.00	525.00	1090.00	540.00	1140.00	500.00
Exterior cement plastering	60.00	60.00	180.00	65.00	125.00	115.00	60.00
Interior plastering	315.00	375.00	265.00	460.00	345.00	540.00	260.00
Painting	200.00	260.00	180.00	325.00	175.00	360.00	165.00
Hardware (rough and finish)	250.00	265.00	175.00	270.00	210.00	285.00	190.00
Electric wiring	50.00	65.00	45.00	60.00	35.00	125.00	40.00
Galvanized iron and tin work	80.00	95.00	75.00	125.00	70.00	140.00	65.00
Heating (air and water)	150.00	165.00	140.00	175.00	365.00	200.00	370.00
Plumbing and gas fitting	250.00	285.00	250.00	275.00	250.00	275.00	255.00
Miscellaneous	45.00	70.00	35.00	65.00	35.00	100.00	20.00
Cost	3481.00	4273.00	3482.00	5547.00	3815.00	6000.00	3475.00
Contractor's profit 10%	348.00	427.00	348.00	554.00	381.00	600.00	347.00
Total cost	\$3829.00	\$4700.00	\$3830.00	\$6101.00	\$4196.00	\$6600.00	\$3822.00

normal and which were mostly of wood construction.

These houses showed in actual cost to have run from 17½c to 19c per cubic foot for total construction, and in all cases the carpenter work, not including hardware, figured at slightly less than 50 per cent. of total cost.

To-day architects and others base their prices on 30c a cubic foot for ordinary houses, and considering that all building materials have not advanced in the same proportion it would not be safe (even considering 30c as a fair figure) to base the carpenter work on a basis of 50 per cent. of the estimated cost.

Of course all items in the carpenter work have not advanced in these proportion, and the writer simply illustrates these to show that if the total cubage price per foot has advanced to a certain figure, it is not right to suppose that the carpenter work stands in the same proportions to the total as in years past.

Factors Which Influence Cost

As every builder knows or should know, that the public has most hazy ideas as to what is cheap or costly about the making of a house, and, so I'll try here to render a bit of first aid to the home planner, to give some elementary notion of the sort of house one must suggest to a customer to get a really low cost home.

Now, two things entered, in somewhat equal proportion, into the building of a house, labor and material. Most folks consider only the second item. Any seven-room frame house will be much cheaper than any seven-room brick one, because a square foot of brick costs more than a square foot of lumber, reasons the public.

But, as a matter of fact, there are many frame houses that have cost more than the neighboring brick houses of equal area, all because of certain bay windows, irregular roofs, and such things, that take a disproportionate time to cut and fit. Even the material is often underestimated by the inexperienced builder of this class of work.

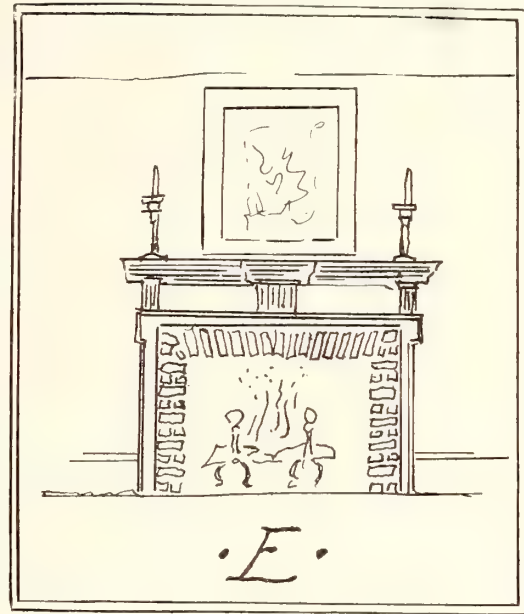
Bungalow Not Cheap to Construct

There is a widespread belief that a bungalow (a real bungalow all on one floor) is the cheapest type of house. Somehow every one seems to forget there is just twice as much roofing on a six-room bungalow as on a two-storey house with three rooms to a floor, twice as much foundation too. So after crediting the cost of a stair-way, and debiting the extra roof and extra basement, we find the balance of cost is decidedly against the bungalow.

Likewise, most folk firmly believe that a geome-

trically square house is cheaper than any other style, because a square has less outside wall than an oblong of equal area. In most cases, however, the small saving in sidewall is more than offset by the excessively long and heavy roof-rafters that the square houses requires, besides, an oblong rectangle usually permits a far more economical room arrangement.

Another fallacy is the use of old material. "I'll get enough lumber, doors, sash, etc., from that old school to build my house," declares my friend, cock-suredly. When his bills are paid, he finds that the

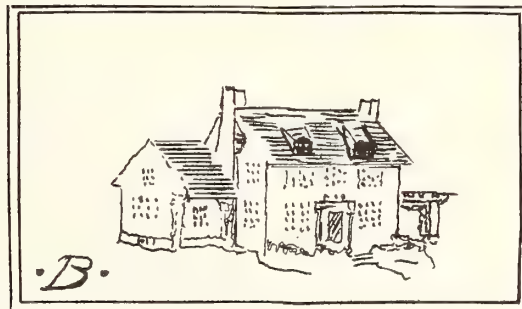
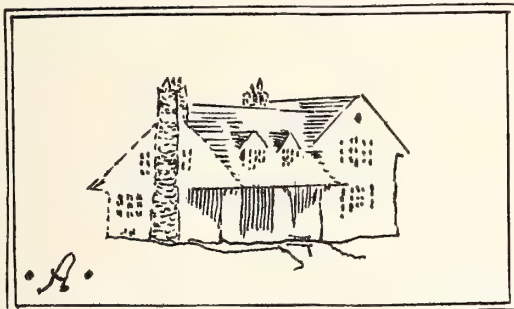


Mantel made of stock material

labor of tearing down, cleaning up, and making over has offset the saving. He might just as well have bought new material in the first place.

Comparing Types of Houses.

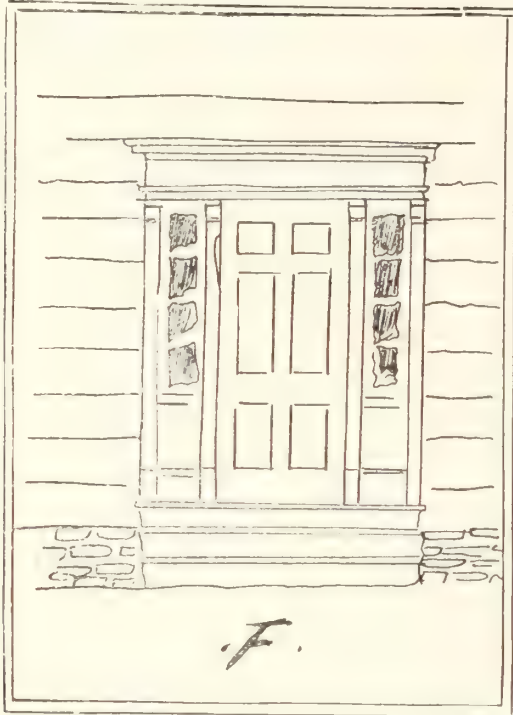
As I have just said, the bungalow is usually very expensive, and so is any cut up, irregular type. Here are two sketches A and B. Let's us compare them. A has no available attic; all the rooms must be on two floors, there by increasing the roof area. The left-hand wing, with rooms run up onto the roof, take an excessive amount of material and labor, since one must practically build square walled rooms behind the slanting roof rafters. The former construction, too, is very costly, and the intersecting roofs with



Type A is much more expensive to construct than type B

their elaborate framing and metal valleys will run the price up.

The sketch marked B on the other hand, shows a simple straightforward house that can be built for absolutely the minimum cost factor per cubic foot. There are no breaks, the walls run straight up to the eaves, the roof is perfectly straight, with no inter-sections or valley-rafters. There are probably two good bedrooms in the third storey. This, of course, saves the amount of roof and foundation that would otherwise be required if these two rooms had to be spread out on the lower floors. The dormers are the plain square-topped Dutch type; costing at least \$25 less each than the peak topped dormers in A.



Type of entrance that must be made to order

In general line B is Colonial. The cornice is perfectly plain; for a gang of carpenters can easily spend several days framing and fitting the daintily membered affairs that edge the eaves of many so-called Colonial cottages. It is far cheaper to get one's effects by heavy shadows, than by elaborate detail.

Determining Sizes of Rooms.

When laying out room sizes the amateur always takes some even figure, 12 feet for instance. This means that a 12 foot joist will just fail to span, and the next stock length 14 feet will have to be used, cutting off 18 inches or so. Lumber always comes in even foot lengths. The waste in building an ordinary house may be judged by the huge stack of firewood that the contractor offers for sale at a dollar a load. You have already paid for this firewood at about 5c to 7c a foot.

Rooms, therefore, should always have their shorter dimensions 8 inches less than an even length—9 feet 11 inches, 13 feet 4 inches, and so on. The rafters, too, may usually be cut without waste, by taking a little care in designing the slant of the roof.

Economy of Short Lengths.

Prejudice is blind, unreasonable, tenacious of life and self-assertive. It raises its discordant voice long

after the cause has been eliminated. Were it not so, short lengths of lumber would be in general favor instead of being sought by the relatively few who realize their worth.

A carpenter will take a twelve-foot board and blithely produce from it eight pieces eighteen inches long, then gravely tell his employer that he cannot afford to bother with six-foot lumber, sheeting, siding, flooring, etc. Why? He never has and therefore he concludes that he never should. His reasoning is specious, but it seems to satisfy the reasoner.

In making out a house, barn or repair bill the carpenter calculates the number of feet of siding, boxing, sheeting and sub-floor material he wants by ascertaining the superficial area to be covered and adding sufficient to cover wastage. About the only statement he makes regarding lengths is that a certain portion should be sixteen feet long, the remainder preferably twelve and fourteen-foot stuff.

With this important feature of his lumber bill thus summarily disposed off, he makes an elaborate calculation showing the number and length of joists, studding and rafters he requires, usually specifying

Comparative Cost Prices, 1914-1919

Cost of square of siding, 1914		Cost, 1919	
Siding at \$31 per M.	\$3.88	\$72.00 per M.	\$9.00
Carpenter labor at 45c, 4 hrs.	1.80	.75 per hr.	3.00
Nails, 2 lbs. at 3½c.	.07	.05½ per lb.	.11
Painting, three coats	2.90		4.50
Cost of labor and material	8.65		16.61
Profit, 10%	.87		1.67
Total cost	\$9.52		\$18.28

Cost of square of shingles, 1914		Cost, 1919	
4/5 M red cedar shingles .. at \$3.25	\$2.60	at \$9.50	\$7.60
Labor, 5½ hours .. at .45	2.48	at .75	4.13
Nails, 3 lbs. .. at .04½	.14	at .06	.18
Stain and labor dipping	2.50		3.50
Cost, labor and material	7.72		15.41
Profit, 10%	.78		1.55
Total cost	\$8.50		\$16.96

an extra lot of "sixteens" for cripples.

The great reason of this course is that such methods of procedure have been customary and the individual lacks sufficient initiative to get out of the old rut.

Most of the short length stock can be used absolutely without waste, effecting an actual saving in the quantity of material it is necessary to order, as well as getting a considerable part of it at less than the price of regular length stock.

In an ordinary house covered with beveled pine siding, there is room to use to advantage short length material in about the following proportions: 400 feet of 2, 3 and 4-foot stock; 600 feet of 5 to 9-foot stock; 1,200 feet of 10-foot and longer stock.

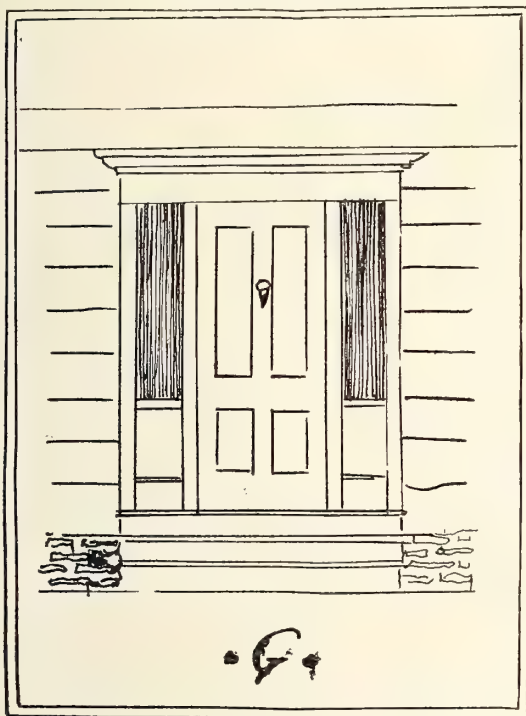
The 2, 3, 4-foot stock will cut without waste in 8, 9, 12, 16, 18 and 24-inch spaces and the 5 to 9-foot stock can be used to advantage to cover openings between windows, doors and for the gables. Examine any frame house and note the large percentage of short lengths used.

Advantage of Using Stock Material.

One of the largest single cost-items about a house is the mill-work, the doors, windows, stair material, cornice and such. It is far easier for the architect to sketch out mill-work to suit his design instead of

hunting to see what is carried in stock. But not so the contractor, who is building to help supply the urgent demand for houses in every locality—stock mill-work can be used successfully and at very small cost of time and trouble. For example, the mantle F is a copy, in its proportions, of a delightful Eighteenth century original; had it been detailed with special mouldings in the ordinary way, the millman would have been safe in charging \$30 to \$35. But this was for a builders' own home. He carefully chose certain stock mouldings and let the carpenter put them together. The total cost for labor and material was \$7.04, and he has often been asked where he bought the beautiful old mantle.

Take the door way at F. This is special and would cost \$50 to \$75, depending on the quality of the detail. You can't get this in stock, for these bargain-



Considerable saving effected with this style door

counter fellows make the most impossible sidelights, say your achitectural friends. Quite true; but some of the purest Colonial doorways have only plain glass held in place with stops. Therefore we may build this doorway at "G" with strictly stock material and a simple four-panel door, a stock in every mill. I have carefully figured the cost and find it less than \$20. These are just a few suggestions. Stock material alone will not solve the question of cost. There planning. Somehow you can't drive it into people's heads that a house costs pretty nearly in proportion to its size: that one foot added to the width of a room will mean \$60 to \$100 extra. In other words, the minimum cost per square foot of ground area for a simple two-storey house is \$5. Remember that, please, when you advise big rooms, wide hallways, deep closets and such like spaciousness.

There is no doubt that every labor-saving device will now be used, as labor is so dear.

Have you tried thick whitewash on the ends of thin boards to prevent them from splitting?

Thirteen Basic Industrial Principles

A statement of principles of industrial relations, prepared with a view to furnishing a basis on which American industry can build a national labor program, was submitted to a referendum vote of the membership of the Chamber of Commerce of the United States. The principles thirteen in number, were prepared by a special committee of the chamber after a long period of study of the entire subject of industrial relations. They are given as follows:

1. Industrial enterprise, as a source of livelihood for both employer and employee, should be so conducted that due consideration is given to the situation of all persons dependent upon it.

2. The public interest requires adjustment of industrial relations by peaceful methods.

3. Regularity and continuity of employment should be sought to the fullest extent possible and constitute a responsibility resting alike upon employers, wage earners and the public.

4. The right of workers to organize is as clearly recognized as that of any other element or part of the community.

5. Industrial harmony and prosperity will be most effectually promoted by adequate representation of the parties in interest. Existing forms of representation should be carefully studied and availed of in so far as they may be found to have merit and are adaptable to the peculiar conditions in the various industries.

6. Whenever agreements are made with respect to industrial relations they should be faithfully observed.

7. Such agreements should contain provision for prompt and final interpretation in the event of controversy regarding meaning or application.

8. Wages should be adjusted with due regard to the purchasing power of the wage and to the right of every man to an opportunity to earn a living at fair wages, to reasonable hours of work and working conditions, to a decent home, and to the enjoyment of proper social conditions.

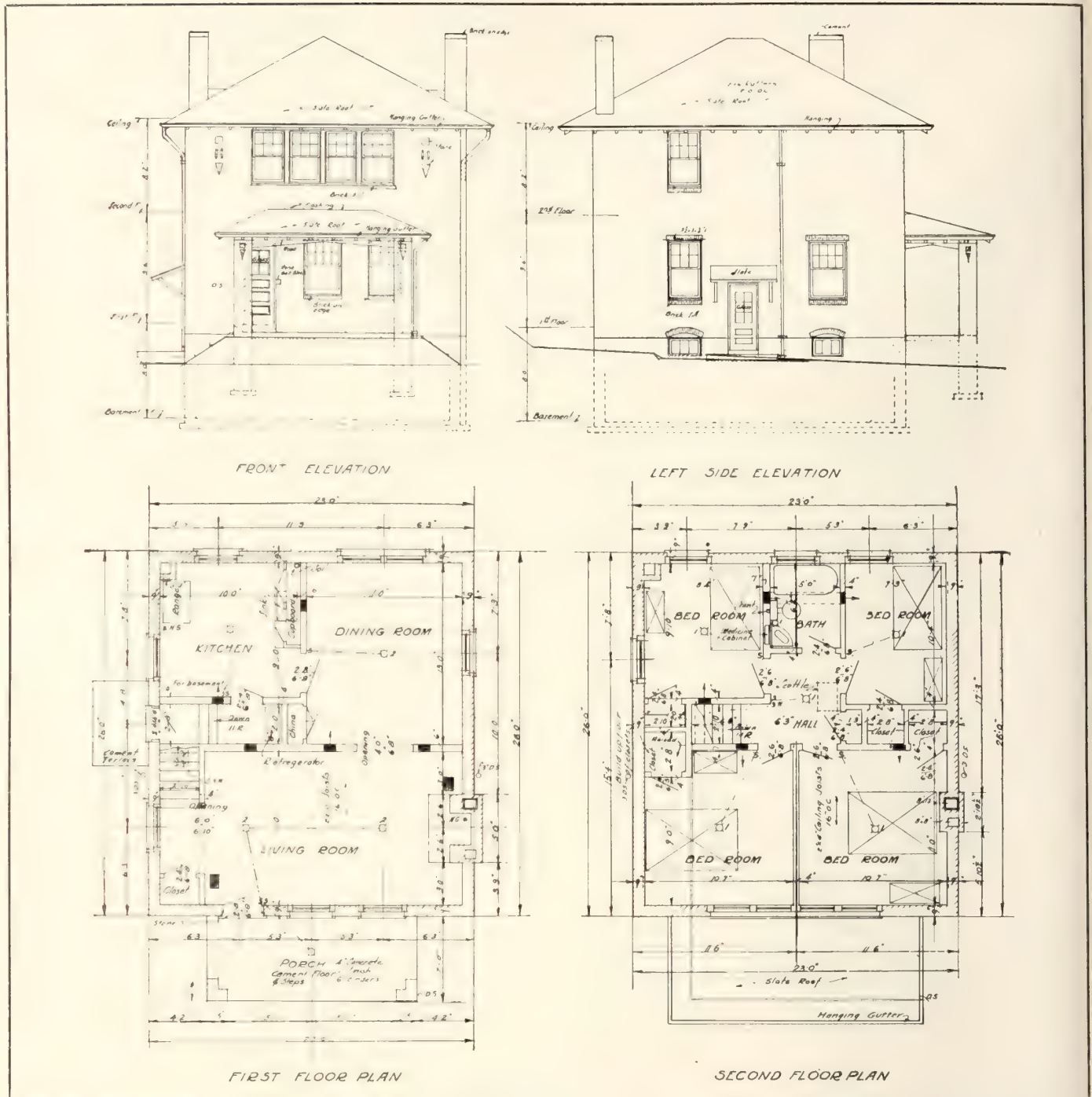
9. Fixing of a basic day as a device for increasing compensation is a subterfuge that should be condemned.

10. Efficient production in conjunction with adequate wages is essential to successful industry. Arbitrary restrictions on output below reasonable standards is harmful to the interests of wage earners, employers, and the public and should not be permitted. Industry, efficiency and initiative, wherever found, should be encouraged and adequately rewarded, while indolence and indifference should be condemned.

11. Consideration of reduction in wages should not be reached until possibility of reduction of costs in all other directions has been exhausted.

12. Administration of employment and management of labor should be recognized as a distinct and important function of management and accorded its proper responsibility in administrative organization.

13. A system of national employment offices, with due provision for co-operation with existing state and municipal systems, can be made, under efficient management and if conducted with due regard to the equal interests of employers and employees in its proper administration, a most helpful agency, but only if all appointments are made strictly subject to the Civil Service law and rules.



Comfortable Homes for Workmen

The accompanying sketches show a type of seven-roomed house that the Westinghouse Electric & Manufacturing Company are building for their employees in East Pittsburgh, Pa. At present forty-eight houses are under construction, but that number will likely be increased.

In designing these homes an effort has been made to do away with features that have outlived their usefulness. The parlor and centre hall, so common in many houses, are missing, and in their stead is found a large, comfortable living room with a large fireplace. Eliminating the centre hall effects a considerable saving in space.

The dining room, which adjoins the kitchen, is provided with a large china closet, while in the kitchen a built-in sink and cupboard is included. Having the kitchen and dining room adjoining lessens the

number of steps and aids materially in decreasing the labor of housekeeping.

A grade entrance is provided at the side, which, while serving the kitchen, gives admittance to the basement, and enables ashes, etc., to be removed from the cellar without having to carry them through the kitchen.

On the second floor four bedrooms are arranged, each with a roomy clothes closet. A commodious linen closet for bed clothes, etc., is constructed off the hall.

It may be of interest to know that the Westinghouse Company is one of the pioneers in building houses for its employees, having constructed a number of homes for their workmen ten years ago. In addition they own a large number of apartment houses. T. P. Gaylord, vice-president of the company, is in charge of the building programme.

How the Industrial Democracy Plan Operates

Leith Plan Proving To Be Panacea For All Ailments Caused By Unrest Among Labor, Says Famous Writer on Industrial Relationship—Salient Features of the Plan Are Explained in Detail—How To Introduce Plan

By B. C. Forbes

The constantly increasing inquiries from leaders in various lines of business throughout the country evidences the growing public interest in the plan of Industrial Democracy at the Demuth plant. These inquiries include requests for a brief description of our community of interest plan and of our experience with it. They can, perhaps, best be answered in a general way for the benefit of American manufacturers and employers by taking up a few of the different questions generally asked by our correspondents.

Is the plan still an experiment or has it been satisfactorily worked out?

It has been in operation for two years, and while we are continually making minor improvements in our organization, nevertheless we have actually tested the plant under circumstances which leave no doubt in our minds as to its success.

What is the central idea?

It is a system of self-government modeled upon our own Federal Constitution and National Government by which our nine hundred men and women employees at Richmond Hill, New York, have a voice in the running of the plant.

Just what is the system of representation?

The representation follows closely upon the lines of our own National Government. There is a Cabinet, a Senate and House of Representatives. The Cabinet and Senate are not elective bodies; the members of these bodies hold their places by virtue of their position in the business. The Cabinet is composed of the executives of the company and the Senate of the foremen and heads of departments.

The house of Representatives, as in the case of the administration at Washington, is the popular body. It is elected by secret ballot by the whole body of workers. There is approximately one representative for every thirty workers, and each department is represented. The only qualifications placed upon the men or women elected are that they speak and understand the English language, that they shall have been in our employ for at least one year, and that they be "on the level."

What is the method of procedure of transacting the business of the firm in connection with the House and the Senate?

As in the case of our National Government, rules have been established by which the House and the Senate do their business. Meetings are held once a week by each body separately. Each body elects its own officers and appoints standing committees to which are referred all prospective legislation. When these committees make their report, the subject in question is thoroughly and openly discussed, and if any legislation has been passed and recommendations made the matter is brought to the next body for its action.

Naturally, to become a law, a bill must first pass both the House and the Senate and also receive executive approval.

What happens when the House and Senate pass a bill and it is disapproved by the Cabinet?

No such situation has yet arisen in our two years' experience. The Cabinet has the power to veto, but to this date has never exercised this power, there having been no need for it.

What are the Representatives' duties?

The Representatives in the Lower House act as counsellors within their departments. They receive and transmit to the House all suggestions and complaints, and they are also responsible for keeping their fellow-workers informed as to what takes place at the weekly sessions of the House.

How can legislation be initiated except by being introduced by a member of the House?

The Cabinet can initiate legislation by means of a message to the Senate or the lower House, and the same opportunity is open to the Senate.

How was the Industrial Democracy Installed?

The Industrial Democracy plan was brought to the attention of the firm and employers by John Leitch, a business engineer of Philadelphia, who, at a series of general mass meetings attended by the members of the firm, as well as by the employees themselves, discussed the necessary foundation stones of a new business policy, starting with Justice, Co-operation and taking in Economy and Energy, with the final keynote of Service. After accepting this business policy as a guide for our work and actions, we started to govern ourselves under this new dispensation with the understanding that all rules and regulations affecting the employee were to be in the hands of the legislature subject to the confirmation of the Cabinet.

Did you have any trouble in introducing the plan?

Frankly, at the outset, some of the workers received the idea rather coldly; others viewed it with more or less suspicion. The interest of all was aroused, however, when presently it was explained to them that if, by reason of any co-operation induced by this plan, there was a saving in the cost of production, such saving, whether in overhead or because of larger production, would be divided equally between the company and the workers. And when at the end of two weeks we were able to declare a 6½ per cent. dividend and thus give them concrete evidence of our sincerity, they warmed up to the idea and were enthusiastic in their endeavors to make the experiment a success.

Was the plan introduced because of the fear that labor trouble was imminent?

Emphatically no. We have had no labor trouble in our business for many years and did not fear any at the time we started this plan. It seemed to us the wise and liberal, as well as a paying policy. We had been established for over fifty years, and when the growth of our business made intimate relationship between the employer and employee impossible, we realized that only through giving the worker his say in the running of the plant could we get the co-operation

so urgently needed to further promote business. Before then the labor leader had been the only teacher of the workingman and we knew it would pay us to endeavor to educate him in a way that would teach him the value of co-operation.

Do you believe any profit sharing plan would produce the same results?

We believe that profit sharing is one method, and ours, based upon actual performance of the worker, is another. The profit sharing plan has many worthy features, but we do not believe that many workmen understand the inevitable variation of the percentage of profit. Furthermore, we do not believe that he should be made to suffer for any losses connected with sales, finances or raw merchandise investments, all of which are beyond his control. Our plan is based upon a saving accomplished by the worker in both production as well as overhead. Furthermore, under our plan, whereby we give our employee his dividend every two weeks—incidentally in a separate envelope marked "Employee's Dividend"—he does not have to wait for what seems to him the indefinite future to learn whether or not the employer is living up to his promises. He can watch his dividend grow larger or smaller, and soon he will begin to learn that when every machine is running all the time he makes more money than when his fellow workers take holidays and machines are left idle. Thus he comes to know that co-operation means a larger pay envelope.

Is Industrial Democracy suitable to any Business?

Of course, every business has its own individual problems and no system laid down will be universally applicable. But it is our opinion that the principles can be made to fit in any organization employing labor to any extent.

Has not Industrial Democracy undermined your authority, the authority of the employer?

No. It has not in the slightest impaired the authority of the employer. On the contrary, that authority has been strengthened by reason of the fact that no important action is taken without the approval of the employees through their Representatives, and today in our plant anyone inclined to be troublesome must reckon with the force of the opinion of his fellow workers, which is a most powerful factor.

What effect, if any, has the plan had on the labor turnover?

As a result of our Industrial Democracy, our labor turnover has gone down to a point where it is not a serious factor with us. During the height of the war, when high wages in the ammunition plants were tempting workers, and our neighboring manufacturers were feeling the shortage of labor, we fortunately had the interest of the men themselves in this problem. Knowing that lack of help would reduce their dividends, our employees saw to it that their fellow-workers stayed with them, and their friends were brought in to fill any vacancies.

What effect has your Industrial Democracy had on the cost of production?

Frankly, we cannot say specifically whether or not Industrial Democracy has reduced the costs of production during the last two years; our costs have risen, as we expected they would, due to the same conditions which affected everyone else. We did not in the beginning have any illusion that Industrial Democracy would keep our costs down to pre-war basis. How

much lower they have been than would have been the case if we had not Industrial Democracy is largely a matter of speculation. We honestly feel that we have distinctly profited from this point of view. We are convinced that under the old system, the difficulties with employees suffered by many other firms, would have increased costs far beyond the point to which they did rise.

What is the biggest and most difficult task in the installation of Industrial Democracy?

The biggest and most difficult task in the installation of this plan is establishing confidence between worker and executive. Without the co-operation of the whole body of workers, the idea must fail, but our experience has been that when employees are once convinced of the company's sincerity this co-operation is given whole-heartedly. Our dividend system, whereby the workers receive bi-weekly additions to their regular pay, is a powerful factor in gaining this confidence.

Are you able to give an example of how any one move suggested by the employees has reacted to the benefit of the firm itself?

Yes. Take the questions of hours of employment. We were working fifty-three hours a week. At one of the meetings of the lower House it was suggested that the working hours be reduced to fifty without a loss of production and a certain saving in overhead. The subject was argued from every possible angle. Finally, all three bodies came to the conclusion that they would try it out. If the experiment resulted in any loss of production the workers agreed to go back to the fifty-three hour week. Everyone pledged himself to a full, honest, fifty-hour service, promising to avoid tardiness and idle machinery. Before the trial period was over the production was increased by about eight per cent., which meant better income and saving for all concerned. A few months ago the Cabinet suggested to the men that as long as the first change of hours worked out so successfully, the House and Senate should consider the advisability of changing to a forty-eight hour week. After quite some deliberation, the new schedule was accepted, and we are now working forty-eight hours without having decreased the production.

What effect has the community of interest idea had upon quality production?

Many of our men are piece workers. Some were in the habit of rushing their work so that they could make the most money regardless of the quality of their output. At the meetings of the lower House the Representatives of the workers learned that this policy was lowering their dividends, for it was resulting in a great many seconds and thirds, and a large amount of waste. The Representatives brought home this fact to the workers, who began to realize that any gain made by rushing their work was more than offset by the loss in dividends caused by this method. Consequently, they soon began to turn out better pipes.

Another important factor in raising the standard of quality is that, by reason of his having a voice in the management of the plant, the workers take more pride in the product, as in the case of the craftsmen of old.

Name one of the important results, if not the important result of the community of interest idea.

From the human standpoint the most pronounced

and satisfactory result—the one thing more than any other that has made it seem worth while—is that our Community of Interest Idea has helped to make better men and women. It has increased their self-respect, for they feel that they are now being treated not as “hands” but as men and women. Consequently, one and all take pride in their factory, pride in their labor and pride in their product. Naturally, too, our Community of Interest Idea has made life more worth the living, in that employees, and ourselves as employers, now occupy the most happy relationship to

each other. From the business point of view solely, the Community Idea has developed a new and remarkable teamwork throughout our whole organization, with the result, as already stated, that we are making better pipes and more of them.

What cannot be accomplished by an organization building with the principles of Justice, Co-operation, Economy, Energy and Service! With that kind of foundation, it seems to us that almost any kind of accomplishment within reason is possible. (Taken from the August American Furniture Manufacturer).

Keeping Machines Operating Steadily

Cause of Breakdowns—Work Properly Scheduled—Efficient Repair Man And Thorough Periodic Inspection

By W. R. D.

Even under normal conditions it is generally agreed that breakdowns and waiting for repairs on equipment are very expensive. In many shops, under ordinary conditions, extra machines are available which can be pressed into service while other machines are being repaired. Now, when all machines are being used to their fullest capacity, an hour's time lost, on account of a break-down, cannot be replaced. These break-down delays can be directly charged against one of the three general causes: 1. The abuse or improper use of equipment, which causes the breakdown. 2. An inefficient maintenance system which permits machines to stand idle awaiting repairs. 3. An inadequate or entirely lacking inspection of equipment which would remedy small defects and prevent more expensive breakdowns and idle periods.

Instructions Given to Operator

Considering abuse of equipment, it is very essential that special effort be made to educate the operator of each machine in the use of his equipment and how to take proper care of it. This can be done after the proper use of equipment has been standardized and its capacities and limitations are known by direct appeals to the workmen, either by personal instruction or through bulletins and written instruction sheets.

Much of such misuse can be prevented if work is properly scheduled and dispatched, since the result should be that operators are not asked to execute work for which their machinery is not fitted. Standard instruction sheets are very desirable, showing what tools can best be used and what speeds and feeds can secure the best results.

There should be written instructions, preferably in permanent chart form, posted at machines, to indicate when and how machines should be oiled and greased. If there are a number of machines it might be desirable to have one man devote his entire time to oiling and greasing equipment regularly.

Importance of Repair and Dispatching

In order to insure prompt repairs and prevent long idle periods two things are necessary—good mechanics and proper dispatching of repair work. There is no economy in employing inexperienced and, therefore, cheaper mechanical talent for repair work. Even if they are idle part of the time good mechanics are an economy; in fact the better they are the better the

maintenance system, the more idle time they will have as break-down time becomes less and less. In large organizations where there is need for it, separate gangs and even departments are advisable to take care of immediate calls for service.

The dispatching of this kind of work, where emergency and immediate orders are the rule, is very difficult, yet there is probably no place where dispatching can be made to pay such high returns. Without it a force of men for repair work large enough to take care of the greatest demands made at one time would need to be maintained, which would mean expensive idleness for many men the greater part of the time.

Employment of Inspector

Regular and thorough inspections of machinery by a competent man are important and essential for a continuous operation. Oftentimes he will find it possible to make minor repairs which will prevent more serious ones later on. He will note whether machines have been properly used or not and arrange for education or reprimanding of their operators. He will note whether machines have been properly oiled and greased and whether repairs have been properly done. In fact, it may be found desirable to have such an inspector go over each repair job as soon as completed, and ascertain whether or not the repairs have been thoroughly made.

Then too, this inspection often will be found to be far reaching in its results, for the inspector, if he is alert and wide awake, will soon begin to bring up suggestions for improving the capacity and design of equipment—100 per cent.

The Spool Industry in the U. S.

Small things are not to be overlooked in considering the problems of the future timber supply. The match-maker has as much trouble in getting the grade of wood necessary for his business as the dealer in telegraph poles.

One of the industries which deals with small things, yet which is one of the utmost importance to the country's commerce is the manufacture and export of spool wood. This business is peculiar to the New England States and is centred in Maine. Spool factories of that State in normal times turn out about 800,000,000 spools annually, with a market value of nearly \$1,000,000.

Dressers That Are Attractive in Design

Simplicity of Lines Tends For Lower Manufacturing Costs—
May be Modified To Suit Requirements

J. and H. B. Beattie

The designs of a number of wooden beds were published in the August issue of the "Canadian Woodworker." The dressers which are described in this article, have been worked out to match these beds. These designs are plain but none the less attractive and when made from some of the better woods, such as walnut, mahogany, oak or gum, should find a ready sale. The construction of these cases has been simplified, as far as possible, enabling them to be produced in quantities at a low cost.

The first illustration is a simple adaptation of the William and Mary style. The toilet standards have turned tops to match the tops of the bed posts. Part of the space between the lower bracket and the top turning could also be turned, if desired.

The overlays on the top rail of the glass frame and on the brackets at the sides, are planted on before the bandsawing is done. The lower rail of the toilet has a divided panel, in the centre of which, between the rails, are three small turnings. The two ends of the panels are sawn, as shown, after the carvings have been fastened on. The lower edge of the top toilet rail and the top edge of the lower rail have a small oval bead strip planted on. The mirror is a plain British plate. The toilet is to stand on the top of the case, held in place by the patent metal fasteners commonly used.

The case top and under frame are moulded. The front corners of the under frame are mitred. The case is provided with six drawers. The small drawers may be fitted for holding jewelry and knick-knacks etc. The gables are of five-ply stock. The pilaster feet are turned and fitted for caster rings. The base has overlays planted on, as shown. The handles are the drop turned kind, of a finish to match the color of the finished article. Walnut or figured gum would be the most suitable woods for this design.

Plain straight lines are embodied in the next design. Toilet standards have turned tops. The top ornament on the glass frame is made separately and has two small overlays. The mirror frame is mitred and carries a plain plate. The lower rail of the toilet has plain upright stiles, placed at equal distances, the spaces being the same width as face of stiles. Toilet stand on top of case is held by metal fasteners.

The case top has a plain round mould on the edge and has no under top frame. Gables of five-ply stock. Pilasters have turned feet. Drawer fronts have wood knobs, either round or square. If desirable a wider stile can be used in the centre of the toilet rail, having carving on it similar to the bed and the carving on the lower drawer front could be dispensed with.

Dresser to be made of plain oak, finished in fumed or Belgian grey.

The third dresser has turned knobs on the tops of the standards. Glass frame mitred and shaped with small carving overlays on the top corners. Plain shaped mirror. The toilet rail has a full-length panel, the inside edges of the rails have a bead strip facing, centre of panel has small carved ornament. Wing

brackets have light carved overlays. The toilet stands on top of case.

The case has single top, moulded as shown. Pilasters have turned feet, the front pilasters can have the small carved ornament, or not, as desired. The gables are of five-ply stock. The base has a plain, oval bead strip along the lower edge. Drawer fronts have round wood knobs. Small drawers can be fitted for odds and ends.

This dresser would look well in walnut, figured gum, or selected plain oak.

The fourth dresser has light rounded overlays and carvings on the top rail of the glass frame, mitred corners, plain, British plate. The standards are sawn; the face corners being rounded off, except where the small overlays are planted on. The lower rail of the toilet of figured material, having the light carvings planted on after the finishing is done.

The front of the case is of five-ply stock with the face veneer running perpendicular. A piece of sufficient size to make the drawer fronts and base is veneered and then cut up into the required sizes, care being taken to number the pieces so that the finished job is a perfect match. Gables of five-ply stock. Pilaster feet are blocked and bandsawed to match the bed.

Nicely selected walnut, mahogany or fine-grained quartered oak will work to advantage on this design.

The last illustration shows a dresser favoring straight lines. The toilet standards have turned tops. Glass frame is mitred. Top rail has planted on overlays. The centre carvings are left off until the article is finished. Plain mirror. Wing brackets, with light carved ornament. The lower toilet rail has turnings that match the bed of similar design.

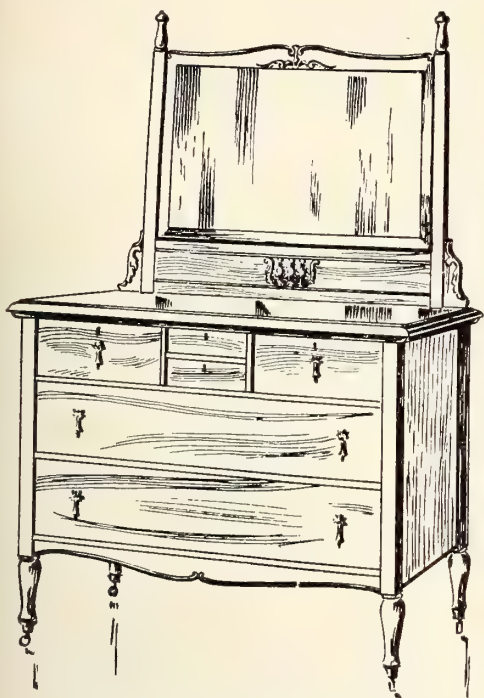
Single top to the case with moulded edge. Gables five ply. Pilasters have square, rounded taper feet, the cove at top of taper being bored first. Drawers have round wood knobs. Base with bead strip. Plain oak would probably prove most suitable for this design.

The top drawers in all these dressers to be provided with locks. There is no use in locking the lower drawers of a dresser unless dust panels are between them.

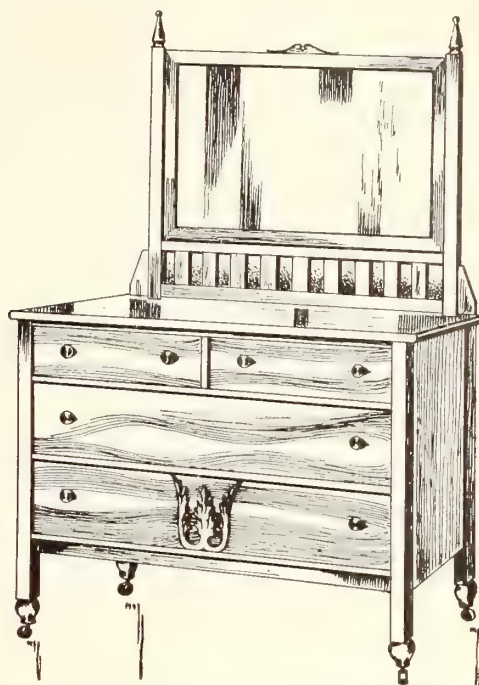
Sizes are not given, as dressers are made in so many lengths that there is no standard, as there is in the sizes of beds. The average dresser case top runs from 40 in. to 44 in. in length by 20 in. to 22 in. in width; the size of the mirror decides the length of the case top, for the proper proportioning of the article.

Keeping Tab on the Absentees

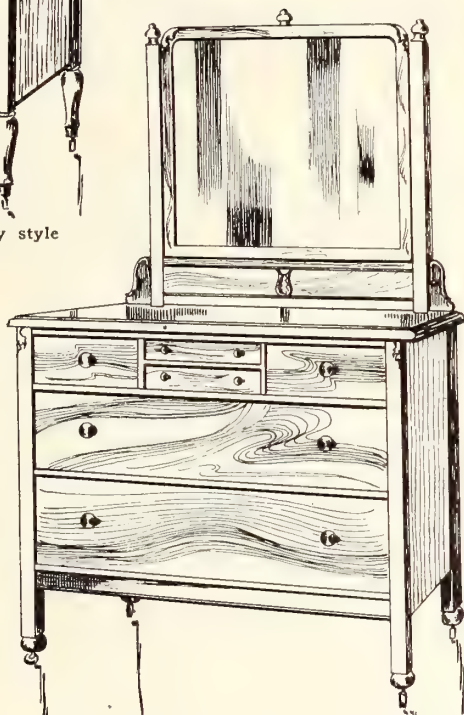
Mr. Willis Wisler, of the U. S. Department of Labor, points out that "Tardiness is incipient absence. Absence is incipient Labor Turnover. It leads to quitting and may cause discharge." The moral effect of adequate Attendance Records is often sufficient to discourage unnecessary absence, but the records must be followed up. You do not want the chronic absentee on your pay-roll and you want to know who he is.



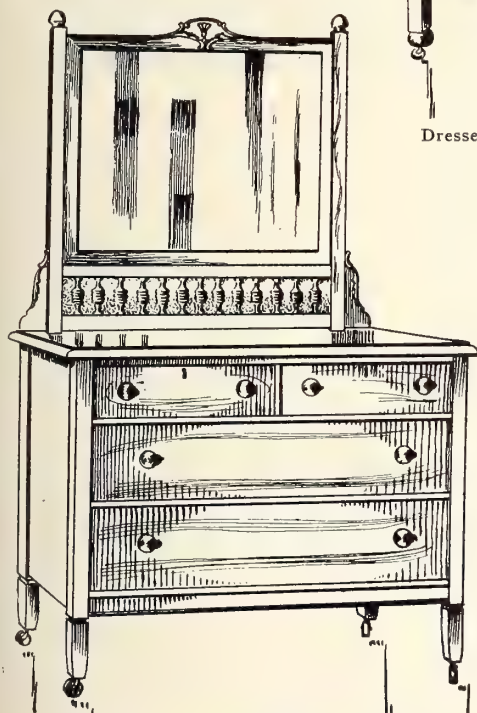
Adaptation of the William and Mary style



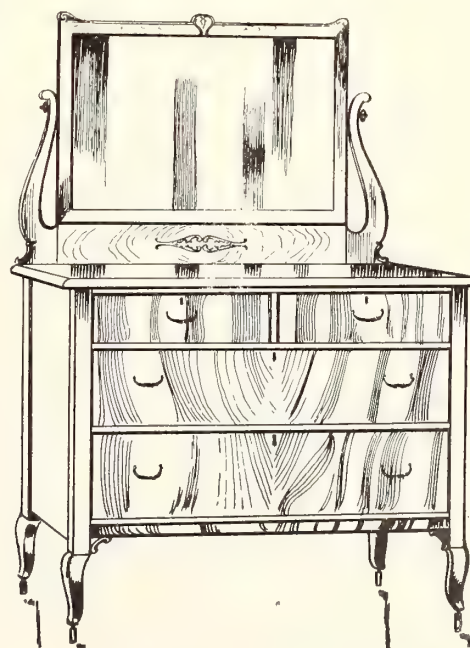
Plain design adaptable to quantity production



Dresser with small drawers for jewellery, etc.



Pleasing design embodying straight lines



Pleasing proportions are embodied in this design



From berry boxes to doors,
including paper, all B. C.
timber products



B. C. Cedar chest and fir
table. Note beautiful grain
of fir in posts



Panels and furniture made
of B. C. woods

Once Too Often—Then It Broke

By M. Wulpi

Why does the engineer overhaul his engine from time to time? Why are elevators inspected periodically? Why are books audited from time to time? Why should a merchant's paying reputation be checked up from time to time? Simply because time changes things. The wear and tear on machinery tells upon it, and it needs close inspection periodically to see how it stands. The books need auditing to determine, not conditions a year ago, but conditions today. The merchant's credit record needs checking, not for what he was yesterday or what he will be tomorrow, but what he is now.

How easy it is to follow the line of least resistance—to get the idea that a merchant who was a heavy buyer last year and who still continues to be a heavy buyer is actually as good a credit risk. Why bother checking up? Time changes things, and the man who was worth \$1,000 credit a year ago might be entitled to \$5,000 credit now, or he may be entitled to only \$100 credit limit. If the former, then you should know in order that your salesman might work him a little harder. In the latter case you might not care to waste so much time on him.

Some people extend credit, in certain instances, entirely on past reputation. It is, therefore, interesting to get one manufacturing concern's explanation. We recently received a claim from them against a merchant we have been reporting as hopeless for some four or five years. We asked if they would give us the data on which they extended credit. Here is what they said:

"We had the record of the pitcher that went to the well once too often. We previously sold these parties, and succeeded in collecting our money, and we thought that we might do it again. Every time we extend credit to a party who has gone on record as not paying all of his just debts we take the same chance as the man who engages in a lottery proposition, or in playing a slot machine, and when we extend credit on such a risk we usually do so with the feeling that we are a little smarter than the other fellow; and as long as we have been successful in getting the money think that we can do it once more, but this is like some other cases where the pitcher finally was broken. — Company were reported by our salesman as doing a good business, and although slow, he thought that he could collect the account—but the account has not been collected."

We need not comment. The testimony speaks for itself. Better check up once in a while, don't you think?—"Southern Furniture Journal."

The Sticker Did Rough Work

By C. H. Putt

A case recently came to notice where a sticker suddenly commenced to turn out rough work upon being fitted with a set of new knives. The sticker man, thinking that one of the knives might have been heavier than the rest, removed them, and tested them for balance. Upon finding that they were balanced perfectly he decided that either something was wrong with the head or that the bearings were loose.

The head was then removed and tested, but was found to be in good shape and likewise, nothing could

be found wrong with the bearings. They were tight in the boxes and the babbitt was in good shape.

He decided to have another try. So after replacing the head and setting up the new knives he tried another run. The results were the same. The work turned out was of a very poor quality. By this time the sticker man was puzzled to say the least. He called the foreman to his aid and told him what he had done. After checking everything together they decided that the fault must lie in the new cutters. To prove their theory they determined to put the old knives in once more and see what would happen. When this was done they were pleased to find that the work turned out was up to the old standard.

The foreman thought that the sticker man had not been careful enough in testing for balance and decided to have a try himself. Needless to say he was deeply mystified when he found that the knives all balanced perfectly. He tried to figure it out but couldn't.

Happening to mention the subject to an "old timer" a few days later he was asked if he had tested the cutters to make certain that they were all of the same degree of hardness. This had never occurred to him, in fact he did not think that different degrees of temper would effect the quality of the work provided the knives were all of the same weight. Taking an old file he went over them carefully and sure enough he found one that was decidedly on the soft side.

After replacing the soft knife they found that their trouble had vanished. The explanation appears to be that the soft knife became dull quicker than the others and hammered on the work, thus causing the marks that was spoiling the finish. One would think that a mark of this kind would have a slightly different appearance to that caused by the head or knives being out of balance.

If you ever experience trouble when using new knives. Take a tip and put the file on them and see if you do not find your trouble.

Piling Chair Stock to Eliminate Checking

The simple expedient of correct piling of oak will prevent a very expensive source of waste to chair manufacturers, according to the Forest Products Laboratory. Season checks particularly to plain sawed oak have caused great loss, one chair manufacturer stating that 50 per cent. of his cabinet repair costs are due to season checks. This loss has often been regarded by the practical lumberman as a necessary evil but the Forest Products Laboratory contends that these wasteful and costly checks can be prevented during yard seasoning by correct piling, and it is proving this contention by experiments.

The primary cause of the trouble is that the plain sawed surfaces of the stock are left exposed to the drying action of the sun and winds; the surfaces tend to shrink as they dry but the interior of the stock, which is not drying so rapidly, resists the shrinkage on the surface and the result is a surface check or crack.

Proper piling will reduce and control the rate of drying from the plain sawed surfaces. If the quarter sawed surfaces, which do not appreciably check even under severe drying conditions, are on the top and bottom next to the supports, and the plain sawed, or sides of the pieces, are brought closely together within, the drying will be controlled and the surface checking prevented.

Suggested Improvement in Layout of Box Plant

More Efficient Routing of Material Could Be Secured—Saving Effected By
Installing Band Mill to Replace Rotary Saw—Carriers for
Removing Waste Cuttings

C. B. Fuller, Jr.

[Asked to comment on the layout of the Wilson Box Factory, which appeared in the August "Canadian Woodworker," Mr. C. M. Fuller, Jr., Bridgewater, Mass., submits the following suggestions. To enable our readers to intelligently follow the changes outlined we are including the cut, showing layout, in this issue. Criticisms and suggestions respecting this layout are invited.—The Editor.]

There is nothing on this drawing to indicate where the lumber yards, entrances, etc., are, but what is most apparent at the first glance is the peculiar shape and constricted main floor, where it has been necessary to place one cut up saw ahead of another on account of the building being too narrow to do otherwise. With labor costs high, and in fact at any time, a straight clear floor with nothing to interfere with straight progress of the material and nothing to demand extra handling such as must be done to supply this third saw, is absolutely essential. This floor is further encumbered by a stairway which has made it necessary to set one of these saws pretty well in from the wall, thereby creating a dead space which will surely be full of scrap and of no use. Possibly, with the stairway removed or placed outside, there might have been room for the third saw, where the lumber from the surfacers could have been dropped right beside it. This third saw might have been placed where it is with the idea of working up cuttings from the other two, but in this case it is also wrong, for each sawyer should cut up each board to the best advantage on his own table, being given several cutting lengths for this purpose, and in this way avoiding the double handling which results from passing all short ends along to another saw.

The rotary saw shown, seems to be out of place in a modern mill. Surely lumber is scarce enough and high enough in price to make a circular log saw which requires a kerf of one-quarter inch up, depending on the skill of the filer, anything but a measure of conservation or economy. A small band mill in this location would be a mighty good investment, no matter whether the lumber was used for boxes or timbers. It would take less power, leave a better finish, and in the case of the box lumber, require lighter planing, which also saves power, knives and time.

The horizontal band saw, shown behind the planers, should have better been a vertical one of moderate size capable of high speed. It looks from the layout, as though all the shooks cut in this mill were cut in the single or finished thickness. This no doubt uses the most of the lumber, but when the finished thickness is less than seven-eighths of an inch, it pays to run the lumber as far as possible through the mill in double thickness, making resawing the last operation, and thereby nearly doubling the capacity of each machine and man, and securing a better and more uniform product. For re-sawing as a last operation, the horizontal band saw is eminently fitted, and consequently this saw belongs at the other end of the floor.

The machinery in the ell is evidently for the manufacture of smaller boxes, or for interior fittings of boxes cut on the main floor. If this is so, a good deal of the material used must come from the main floor and

the line of progress of this stock would be opposed to that entering from outside, resulting in a certain amount of confusion.

The printing room looks too small. The partition from the main floor might have been run across to include the space now occupied by the nailing machine which is probably a cleater for cleating the ends and covers of shooks which do not require to be taken to the next floor.

The cleater in any case should be located at right angles to its present position, so as to have a clear space on each side, one side for unfinished and the other side for finished work. This saves the operator the necessity of turning fully around to reach or place his stock, and thereby saves time and money.

The filing room, which is a most necessary accessory to any lumber mill is not shown, so one infers that it is on the second floor, which is a particularly bad place for a filing room, especially where there are band saws to be handled, and planer knives to be ground, as it means much lost time in changing, and sometimes where it is too far away, saws and knives are not changed often enough.

A little repair shop also goes well with this kind of a plant, and the place for this also is on the ground floor for the same reasons as stated above.

There are no scrap carriers shown on this layout. If this mill were running at full capacity, it would be a great advantage to have the waste cuttings, etc., taken away on a belt as fast as made. This saves manual handling, and besides the runways are not cluttered up with trucks and boxes travelling opposite to everything else.

The kindling wood shed should be near the boiler room, and should be elevated so that a wagon can be driven underneath and loaded by gravity and not by shoveling.

There should be a shavings and sawdust storage separate from each other and each should be over or near the boilers so that they can be either burned, loaded in bulk, or baled or bagged. They must be handled as little as possible to make them pay, even as fuel.

It is possible that many of the points mentioned above may be taken care of in some way or other.

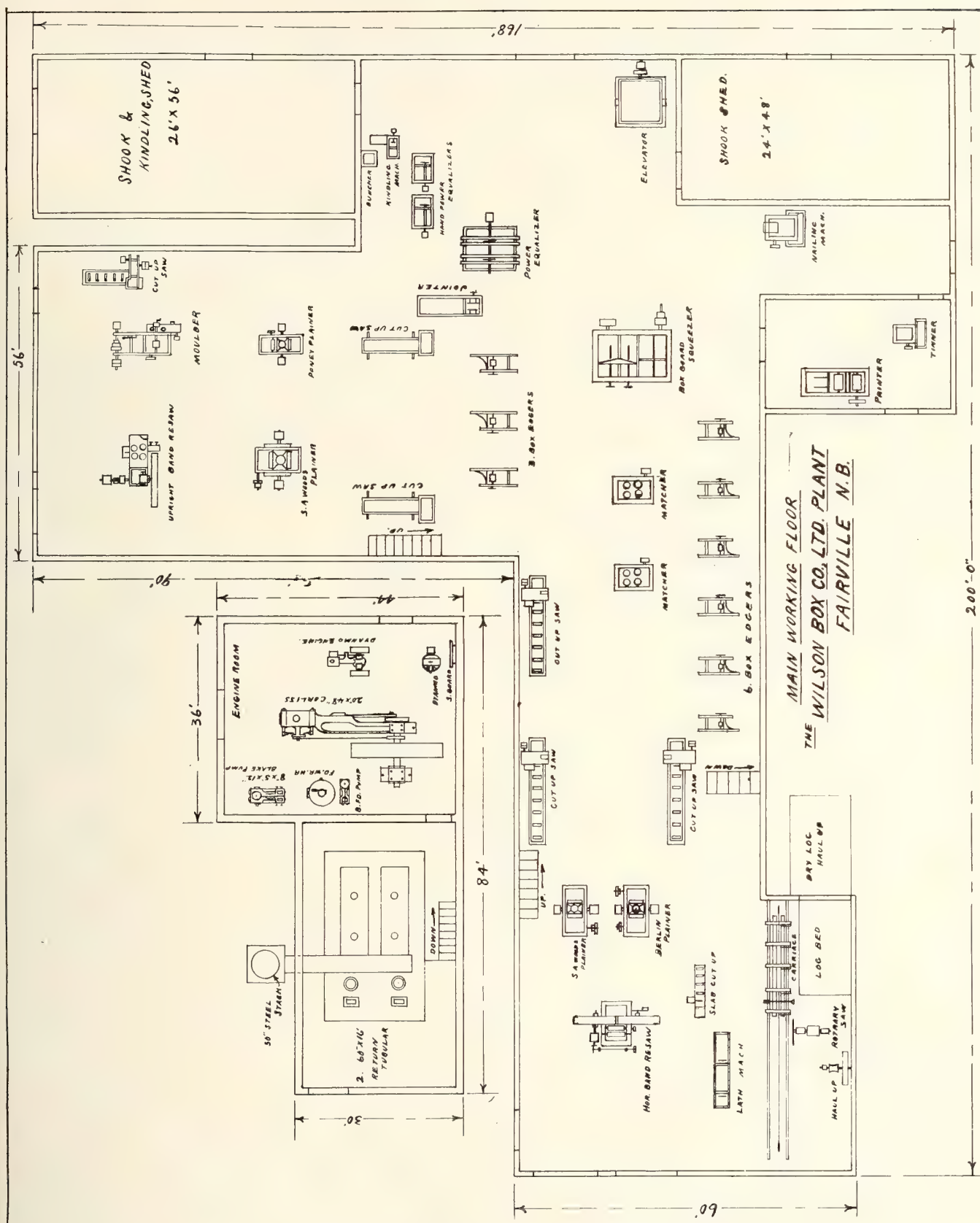
Advertising Value of Printed Boxes

First, a box is a traveling billboard for a good advertising slogan.

Second, a printed box is a dealer's help, because it enables the dealer to display his goods to better advantage, both in his storeroom and in his window display.

Third, a printed box is a cheap method of advertising the goods to the public, because the box is displayed not only in freight depots, but also in wagons and drays going through the city, and usually sets out on the sidewalks from ten minutes to an hour, allowing the public to see the advertising slogan.

Fourth, in comparison with a stationary billboard, box space is the cheapest advertising space that a ship-



Arrangement of Equipment in Wilson Box Factory

per can invest in, because the box will always display his advertisement until it is thrown into the scrap pile. In quite a number of cases, the retailers use the boxes for delivery purposes so that the actual consumer sees the advertisement as well as the dealer.

Fifth, a live advertising agency considers box advertising as essential because they hook this up with

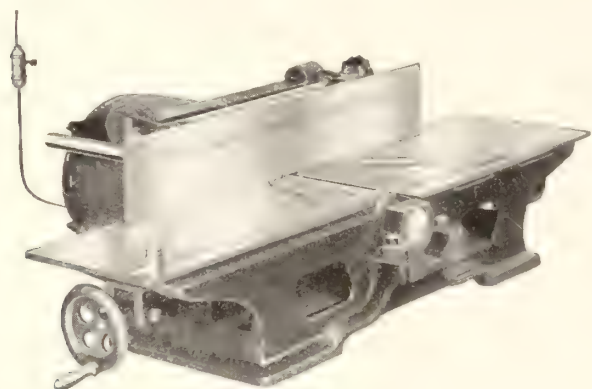
the balance of the advertising. Large shippers utilize all space on the box except the bottom for advertising.

Sixth, this class of printing matter has become so important as a means of advertising products that the California Walnut Association is installing machines whereby every walnut will be printed with their trade mark.

Machinery & Equipment

Six Inch Wallace Bench Jointer

A very useful machine, known as the 6 in. Wallace Bench Jointer, has been developed by the J. D. Wallace & Co., Station C, Chicago, Ill. It is similar to the 4 in. Wallace Bench Planer, which has been on the market for some time. Some of the principal features are: Motor driven (direct connected), derives power from any lamp socket, powerful motor, special fence, which slides on rods mounted on motor, ball bearings in both motor and cutter head bearings, light

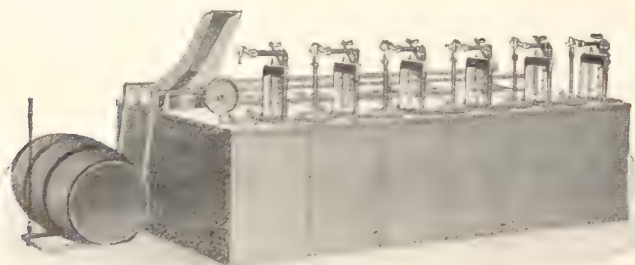


New Wallace Bench Jointer

weight (can be readily carried by one man), safety guard, etc. The tables are adjustable and slide backward to permit the use of special heads. With this machine the time ordinarily consumed in walking back and forth from planer to bench is eliminated, and the work on the big power jointer is not interfered with. In addition, work that would be done by hand under ordinary conditions would, with the bench planer installed, be done on the machine, thus effecting a further saving in time.

Storage Tanks for Oils and Finishing Material

A battery of Bowser storage tanks for storing oils and finishing materials is shown in the accompanying illustration. The tanks are made in various sizes but are standard in height and depth, thus enabling a battery to be made up of tanks of different capacities. They are each equipped with measuring pumps and an indicating gauge, which shows the quantity of ma-



Battery of Bowser storage tanks

terial in the tank. The Bowser method of emptying barrels with cradle, track and dash enables one man to raise and empty the barrels, and further ensures that the liquid is all drained out. Storage systems of this kind help to reduce the fire hazard that is so common where oils are stored. The S. F. Bowser Co., Limited, Toronto, Ont., manufacture this line for Canada.

Electric Glue Heaters

The accompanying illustration shows the "International" electric glue heater—a heater which is being installed in many up-to-date plants. It is made in such sizes as one pint, one, two, three quarts, one gallon, and up to fifty gallons' capacity. The heaters are portable and may be attached to any lamp



International glue heater, in 1, 2 and 4 quart sizes

socket. A switch giving three working heats is provided, ensuring an accurate temperature control under all conditions. The heaters are constructed of heavy spun copper and have a heat retaining jacket which retains and utilizes all the heat generated. The consumption of current is very small as it is claimed that the one-quart size consumes one cent's worth of current per day. It is claimed that their use saves glue, time and operating costs.

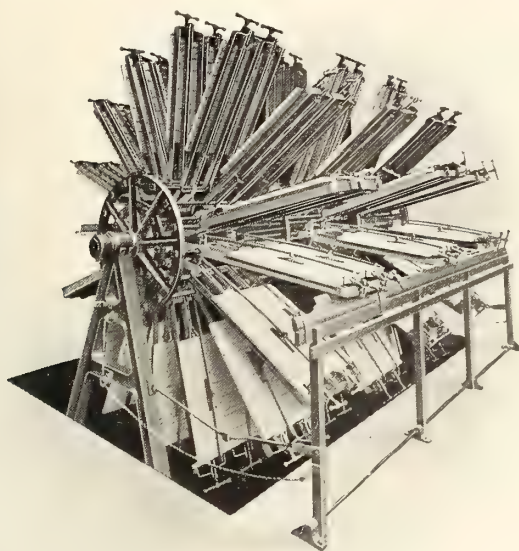
Full particulars may be had from the Canadian distributors, the R. E. T. Pringle, Limited, Toronto, Ont.

Convenient Revolving Clamp

The accompanying illustration shows the No. 200 Perpetual Revolving Clamp manufactured by the Jackson Cochrane Co., of Kitchener, Ont. It is made in various sizes from two sections fitted with 32 clamps to twelve sections, containing one hundred and ninety-two clamps. The clamps, of which there are sixteen tiers, are mounted on steel shafts and are so attached that they can be shifted to any position to suit the length of stock that is going through. A locking device is provided to lock and unlock the revolving cage as the operator fills each of the sixteen tiers. The rocking beam swings out as the machine is revolved and immediately returns under the ends of the following tier of clamps and supports them while they are being filled. The screw

which passes through a malleable clamp head is provided with a ball end malleable handle 9 in. long—the ball allows the screw to be spun in and with only one motion. Each clamp is fitted with side brackets to facilitate the handling of short material and readily

with a tension spring which maintains a uniform pressure on the grinding wheel. The head is pivoted and can be swung in either direction. The tilting of the head gives a concave grind to the knives. An attachment for grinding curved knives to a template can be

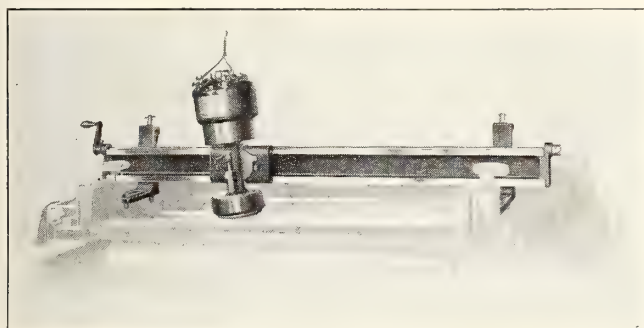


Jackson-Cochrane revolving clamp

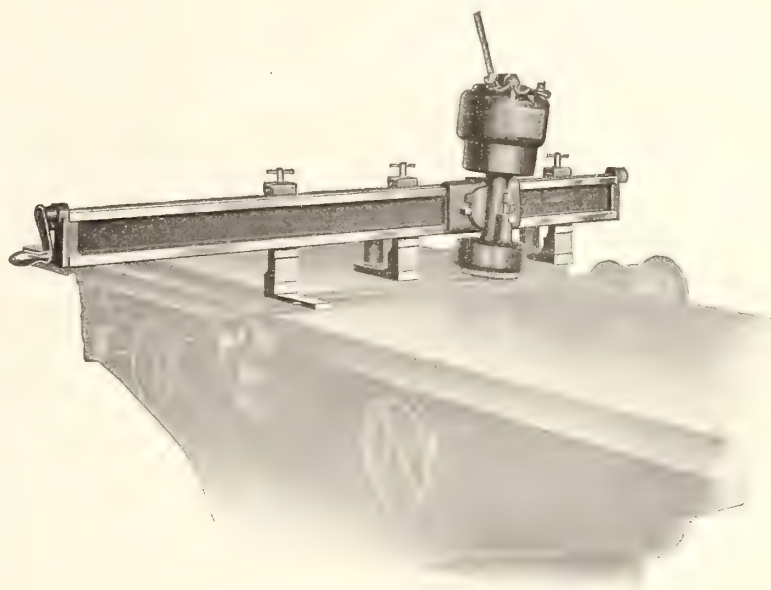
takes stock as short as ten inches. To prevent thin or wide stock buckling a steel binder spring is provided with each clamp. The many advantages of this equipment are obvious. A few that may be mentioned are a saving in time, a saving in space and an increase in production.

Grinding Attachment for Planers

The grinding of planer and jointer knives without first removing them from the machine is a time saving method that is being followed in many up-to-date plants. A great saving of time is thus effected and the accuracy of the work and the fact that the knives are ground in perfect alignment with the bed, work for greater efficiency and increased production. The Quicsharp Grinder has been designed specially for this purpose and can be quickly attached to either planer or jointer. It is motor driven, the motor being mounted in the head of the grinder, and takes its current from an ordinary lamp socket. It is mounted on a bridge and can be fed the full length at any desired speed. The grinding is done by a cup faced wheel, which can be readily raised or lowered. It is fitted



Quicsharp grinder on jointer



Quicsharp grinder attached to planer

secured. With this knives can be ground to a pattern, accurately and quickly. The grinder is made in five sizes, the capacity running from 10 to 60 inches. The Stockbridge Machine Co., Worcester, Mass., are the manufacturers.

Branch Offices Opened by Carborundum Company

The Carborundum Company announce the opening of branch offices and warehouse in Detroit, Mich. The new Detroit quarters will be located in the Burkhardt Building at Second and Larned Streets. The Detroit branch is under the management of Mr. Anthony Dobson who will have charge of the Detroit sales district.

The new offices and the warehouse are opened with a view to giving quicker and better service to the users of Carborundum products in the Detroit district, and to that end a complete stock of carborundum and aloxite grinding wheels, carborundum and aloxite paper and cloth and other carborundum products will be carried.

The opening of the Detroit branch is just another indication of the progressive policy of the Carborundum Company and its desire to improve its service to its patrons in the Detroit territory.

"The interest of Labor is not in the reward which can be obtained after accidents have happened, though that is important; the real interest of labor lies in preventing accidents," says the president of the Trade and Labor Congress of Canada. These are terse and timely words spoken at the annual meeting of the Ontario Safety League. While we may have been unfortunate enough to have left the barn door open, it is good sense to lock it before another horse is stolen.

Workmen's Compensation and Woodworkers

The experience of the furniture and woodworking classes of industry under the Workmen's Compensation Act for 1918 has been much the same as for 1917. The woodworking industries, including planing mills, continue to show a bad accident record. The experience in the furniture class, though not as good as many other lines of industry under the Act, is better than in the woodworking and planing mill class.

The provisional figures for Class 3 (furniture, pianos, etc.) including estimates for adjustment of assessments and for accidents not finally disposed of, are as follows: Total assessments \$68,435.34. Total compensation and medical aid \$65,199.93.

The figures for Class 4 (planing mills, woodworking, box making, etc.) are: Total assessments \$132,138.58. Total compensation and medical aid \$149,081.11.

There has been some comparatively slight readjustment of the rates of assessment in Class 3 but no general increase, the rate for the manufacture of furniture remaining as before. The rates in Class 4 have been increased in several important items, including manufacture of wooden articles, wooden wares and toys. The planing mill rate and the rate for manufacture of wooden boxes remain as before.

It is to be regretted that the experience in Class 4 should be so unsatisfactory, necessitating increase in rates. In most other classes of industry under the Act the experience has been such as to permit a reduction. The rate of assessment fixed when the Act was first going into operation averaged upon all the industries included under the assessment system \$1.64 per \$100 of pay roll. The rate for 1918 over all industries averaged only \$1.09.

With a view to ascertaining the cause of the bad experience in Class 4, and if possible suggesting a remedy, the Board caused a special investigation and study of the matter to be made by the Board's statistician. The result is contained in an article which is being printed in the Board's annual report for 1918. This report, as soon as received from the printer, will be mailed to every employer in Class 4. The article gives the assessment and compensation figures for each line of industry in the Class since the commencement of the Act, also the number and causes of the accidents that have happened, and makes suggestions looking to the prevention of accidents.

The statement of the receipts and expenditure for each line of industry in Class 4 may be of special interest.

Receipts

Collections from Employers	1917	1918*
Planing mills, etc.	74,465.48	72,385.48
Lumber yards, as an industry	545.58	(1)
Boxes, n.o.s.	21,050.65	23,234.45
Cheese boxes, wooden	685.30	(2)
Cheese boxes, fibre board	179.53	(2)
Ammunition shell boxes	(2)	(2)
Cigar boxes	482.62	491.86
Corrugated paper boxes	3,068.82	4,247.03
Mouldings, finished	2,418.02	2,289.33
Mouldings, finishing only	20.61	(3)
Hardwood flooring	1,461.88	1,399.58
Window and door screens	15.71	(4)
Window shades (5)	23.49	(4)
Shade rollers	191.83	212.36
Brooms or brushes, with sawmill	1,558.04	2,260.21
Brooms or brushes without sawmill	604.67	755.47
Carpet sweepers ....	.00	.00
Carpet sweepers, assembling only ..	58.48	57.52

Vehicle woodwork or vehicle parts	3,505.55	2,484.12
Wooden articles, wares, or baskets	17,903.13	20,080.54
Baskets, assembling only	23.06	(7)
Matches	812.84	849.78
Wooden toys	324.22	(7)
Cooperage	987.88	1,390.85
Joiner or cabinet work	70.33	(8)

Totals	130,456.92	132,138.58
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Other Income

Interest added to Class Funds	266.43	860.43
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Total Receipts	130,723.35	132,999.01
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Expenditures

Accident Costs

Planing mills, etc.	57,635.08	61,612.83
Lumber yards, as an industry	262.07	(1)
Boxes, n.o.s.	30,997.67	36,451.90
Cheese boxes, wooden	8,065.94	(2)
Cheese boxes, fibre board	12.97	(2)
Ammunition shell boxes	(2)	(2)
Cigar boxes	324.92	278.59
Corrugated paper boxes	1,156.13	8,517.86
Mouldings, finished	683.12	3,004.45
Mouldings, finishing only ....	.00	(3)
Hardwood flooring	105.30	1,248.18
Window and door screens ....	.00	(4)
Window shades ....	.00	(4)
Shade rollers	60.00	53.62
Brooms and brushes with sawmill	1,283.70	2,038.98
Brooms and brushes without sawmill	229.49	772.85
Carpet sweepers ....	.00	.00
Carpet sweepers, assembling only ....	.00	.57
Vehicle woodwork or vehicle parts	3,476.59	983.27
Wooden articles, wares or baskets	18,651.15	31,575.79

Accident Costs

	1917	1918*
Baskets, assembling only ....	.00	(7)
Matches	75.81	262.60
Wooden toys	202.12	(7)
Cooperage	281.90	2,279.62
Joiner or cabinet work	28.58	(8)

Totals	123,532.54	149,081.11
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Other Payments

Payments to safety associations	2,942.63	1,854.80
Administration expenses	1,004.91	1,555.70
Disaster reserve	1,261.83	(9)
Merit rating refunds	5,013.97	(10)

Total Payments	133,755.88	152,491.61*
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Balance	3,032.53	19,492.60*
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*Actual and estimated. (1) Included with planing mills. (2) Included with boxes, n.o.s. (3) Included with mouldings, finished. (4) Included with wooden articles, etc. (5) Assessment refunded. (6) Class 26 for 1915. (7) Included with wooden articles, etc. (8) Included with cooperage (9) Included with accident cost figures. (10) Not yet determined.

Employees Become Shareholders in Co.

The Marietta Paint & Color Co., Marietta, Ohio, has inaugurated a bonus system, by which its employees are rewarded according to efforts, loyalty and interest manifested in their work, and are made stockholders of the company. Announcement of it was made to the assembled employees a few days ago by President C. J. Lavallee.

The plan will be effective during the current year and the bonus based on the work of the entire fiscal year ending Dec. 1. The bonus applies only to employees who have been with the company one full year or more.

The bonus will be paid in stock of the company and thus from the time it is issued all of the present employees will automatically become stockholders of the company.

Upholstering and Trimming

Chair Presented to the Prince of Wales Probably First Piece of Canadian Made Furniture to Enter a Royal Household

A rather pleasing incident occurred during the recent visit of His Royal Highness the Prince of Wales, to Toronto. The royal party were inspecting the varied exhibit made by the Department of Soldiers' Civil Re-establishment at the Canadian National Exhibition, and upon entering the booth of Mr. H. A. Bywater, upholsterer, 611 Yonge St., Toronto, the Prince was made the recipient of a handsomely upholstered chesterfield chair. The presentation was very informal and was totally unexpected, not one of the Prince's entourage having been informed that a presentation was contemplated.

The chair was presented by one of the returned soldiers receiving training in upholstery, who, in a few well-chosen words, explained that the presentation was made on behalf of his comrades as a mark

will be both comfortable and durable, none but the best material obtainable was employed. The frame was of Canadian birch, while the feet were of mahogany. The covering was a Royal blue mohair velvet trimmed with white and gold silk cord. The Prince



Chesterfield chair in Royal blue, made for the Prince by returned soldiers

of esteem. The Prince thanked him and, after trying the chair, expressed his appreciation at receiving such a fine example of the upholsterers' art. He evinced a great interest in the gift, asking many questions about its construction and in other ways showing that he was genuinely pleased.

A few days later Mr. Bywater received a Royal warrant asking that the chair be forwarded to the H. M. S. Dragon, lying at Quebec. It is expected that it will eventually be sent to Windsor Castle and will be the first piece of Canadian made furniture to enter a Royal household.

Realizing that the best of material and workmanship are needed to make an upholstered piece that



H. A. Bywater, Toronto, who is training a number of returned men in upholstery

of Wales' crest, consisting of three plumes, with the words Ich Dien underneath, was embroidered on the back in white silk. The deep loose cushion with which the chair was fitted, was filled entirely with curled hair.

Mr. Bywater is helping six returned soldiers in their efforts to re-establish themselves in civil life by giving them instruction in upholstery, and after His Royal Highness had passed along Sir James Loughheed complimented Mr. Bywater on the way the chair had been presented and on the work that he had done for the returned boys.

Profit Sharing Adopted by Upholstering Firm

One reads a lot now-a-days about a more equal distribution of profits between capital and labor and many broadminded employers admit that labor is entitled to a share of the profits that remain after capital has been fairly re-imbursed for the money invested and the risks taken. Other large employers of labor have come to the conclusion that a scheme that enables the employee to share in the profits earned will go a long way toward combating the unrest that seems to pervade the employees as a whole.

The Ideal Bedding Co., Limited, Toronto, recently announced a profit sharing policy which the directors have adopted.

A year ago the Directors appointed a Committee to

study the various plans for sharing profits with employees as in use on this continent. The Committee's report covered a large number of plans which were generally to assist employees to buy Company's Stock on an easy payment plan.

The Directors considered:

1. That under this method the benefits came too slowly to be appreciated at their real value.
2. That some very efficient man might have home problems that would make it difficult or impossible to save.
3. That every employee would naturally prefer to make up his own mind as to his ability to save and to invest his savings.

Employees to Receive Dividends on Wages

Briefly the plan is to pay every employee of the Company a dividend on the amount he or she has received in wages during the year. The dividend to be at the same rate as paid to the shareholders. This seems to offer a very happy solution of the profit sharing problem, and every employee of the Company will hereafter be in exactly the same position with regard to earnings as the owners of the business.

The money paid out in wages and salaries by this Company is about equal to the paid up Common Stock of the Company, so that employees and shareholders will participate about equally.

Every man, woman or boy in the employ of the Company at the end of the year will participate.

Any employee who is absent through illness or who is temporarily laid off through no cause of his own, will receive a dividend on the full wages he has been paid during the year.

In case of death during employment, the same benefits will go to widow or children or heirs.

In any employee is discharged for cause and believes he has been unfairly dealt with, he may appeal his case to an Arbitration Board chosen by employees and management.

The benefits will date back from January 1st.

The Directors believe that this plan will increase the earnings because every employee will be interested

1. In taking better care of materials.
2. In making better products.
3. In objecting to carelessness on the part of fellow workmen.
4. In serving our customers and the public to the best of our ability.

The plan is to have the dividends distributed the week before Christmas, when the extra money will be most useful. The employees at the Montreal and Winnipeg branches will be taken care of under this scheme.

"Bacon Box" Furniture Modern Manufacture

From London Chronicle

"Bacon box stuff" is the contemptuous description by second-hand dealers for much of the new furniture now being hastily manufactured. Such is the shortage of timber and the demand for furniture that packing cases, sugar boxes, etc., supply the material for bedroom suites.

One dealer confided to the writer that he had been offered suites in two grades. When he asked the difference in quality between the two the traveller replied:

"Well, in the cheaper line we can't guarantee that names like 'Best Cured Hams' or 'Parson Oats' won't

show up under the varnish. In the better quality we guarantee the wood is stained right down."

Dominion Charter Does Not Supplant Provincial One

It has been debated in various provinces in Canada whether a company operating under a Dominion charter could be required by law to take out a provincial charter. The Supreme Court of Canada has handed down a judgment deciding in favor of the provinces. This means that a Dominion company can be compelled to bring itself under a provincial companies' act as a condition of carrying on business in the province. The effect of the decision appears to be to make a Dominion charter valueless for practical purposes in those provinces which require such companies to take out a provincial license and would appear to apply to all classes of Dominion companies, including insurance companies. The provinces requiring provincial licensing are Ontario, Manitoba, Saskatchewan, British Columbia and New Brunswick.

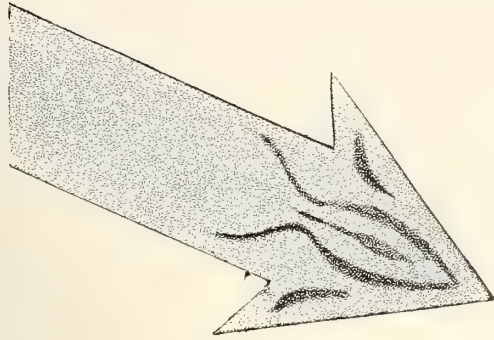
Shipbuilding Industry Must be Continued

Some idea of the importance of the position occupied by shipbuilding in our Canadian industrial life may be gathered from the following figures covering the year 1918 and the first two months of the present year.

Notwithstanding the fact that the shipbuilding industry practically came into being during the war, it has now become one of the biggest employers of labor in the Dominion and, therefore, one of the most vital factors in the industrial life of this country. Contracts already placed with the various shipbuilding companies in the Dominion provide for an expenditure of \$52,691,450, the total tonnage of the vessels contracted for being 263,850. The majority of these vessels are under construction at the present time and efforts are now on foot, in which the leading public and semi-public organizations are joining, urging the Federal Government to continue its shipbuilding policy for at least another two years in order that it give the industry in Canada time to adjust itself to the present conditions.

When Most Accidents Occur

Some interesting facts in regard to safety work have been gleaned from the Safety Committee's experience in connection with the large plants of the General Electric Company industries on the other side of the line. The tabulated data shows that more accidents occur on Monday than on any other day of the week and that the most careful age is found to be 37. Other striking incidents are that the ages showing most accidents in proportion to the number of employees are between 22 and 26, and 50 years and over. The hour showing most accidents is from 9 to 10 a.m. Fifty per cent of the accidents occur to new employees or those who have been less than six months in one position. Contrary to general belief, the foreign-born employees are quick in acquiring the safety habit, if taught. More accidents occur in the hot season than in the cold. Over 80 per cent of the accidents are due to carelessness. The average woman on the same kind of work meets with an accident only one-third as frequently as the average man.



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 and Similar Trades

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Are You Experiencing Trouble With Varnish?

Many Important Items Enter Into the Proper Use of Varnish—Every Finisher Should Make an Effort to Know the Material He Handles

By Dixy Wells

The average finisher has acquired considerable knowledge regarding the successful use of varnishes. Experience has taught him a great deal but there is often room for the acquirements of additional information. Some great writer has told us that no matter how exhausted a study has been made, a lot remains to be learned. It is not by way of criticism but rather as helpful suggestions that the following points are given—it is often not so much education that we need as reminding.

As the varnish coat is usually the last which goes on it is very important that it be thoroughly understood and properly used. Any user of varnish knows how sensitive it is and that proper working conditions are necessary, yet we find many questions arising as to why varnish went wrong when standard quality goods had been used. In the majority of cases unsatisfactory results are the result of careless or inexperienced handling. In one factory we have in mind where the varnish gave trouble, it was found that the cause was damp floors. When sweeping them a rather heavy sprinkling of water was applied, causing a dampness, which disappeared very slowly. In hot weather this dampness sometimes went up in a form of light vapor and affected the varnish coats that were drying.

There are, of course, varying grades of varnish but the following discussion applies particularly to the better quality varnishes, for they as well as the cheaper brands often have trouble. The higher grade varnishes are more delicate, more sensitive than the inferior grades and, therefore, require extra care in handling that a satisfactory finish may result. For instance, a very high priced elastic varnish will crack when exposed to the sun provided the heat is strong and the exposure has been of considerable duration. This condition, you will see, is not at all due to the varnish. Therefore, a little space devoted to the work which lies beneath the varnish coat would be very timely. The labor, of course, should be well done and this proves one of the surest means for procuring a finish that will last and give entire satisfaction.

Brush Marks Need Rubbing Out

It is often the case that too little heed is paid to the simple preparation of the wood surface but as our subject here is finishes, we will, therefore, pass on to the question of rubbing. This is included in the finishing process since it gives to the coats of varnish, which follow, a smoothness not otherwise obtainable. If the brush alone is used tiny ridges or furrows are left upon the plastic surface of the varnish no matter how

careful the finisher may be in applying it or how well the varnish may flow out. To eliminate these little furrows or hollows one should use finely powdered pumice stone and water, or rub with pumice stone and oil. Powdered rotten stone may be used in the finished rubbing. All better classes of work command this operation, and every effort should be made to do it right.

A proper polishing varnish is durable, very hard and gets its name from the fact that it gives a surface that can be brought to a high lustre by rubbing with proper materials. Finishing varnish contains more oil and will not stand rubbing. Considerable force should be used in the rubbing process and the strokes whenever possible should be long, rubbing steadily and uniformly, taking great care not to rub at the edges of any parts liable to cut through. This is considered a very important part of the work. Large surfaces should be rubbed with felt on a block, the block varying in size according to the surface upon which it is used. When rubbing is skilfully done the surface will present a smooth finish without marks or imperfections of any kind.

Clean Surfaces Between Operations

Where water has been employed with the pumice stone powder it should be cleaned up with clean water to remove every particle of pumice. On the other hand if oil is being employed the work should be rubbed clean with rags, then with a rag dampened with alcohol, which will remove all the grease or oil. There is always danger of some of the oil remaining which would later injure the flowing of finishing coats.

Upon the character of the job depends the number of coats of varnish which should be used, for instance, as many as seven are used in high class piano finishing. You will find that the best rubbing varnish is not heavy in body, but is of medium consistency, and its temperature and also that of the room should be about 70 deg. This insures good working and flowing.

In the best work, several days are allowed for thorough drying although some varnishes may be rubbed in forty-eight hours, but there are others used on the very highest class of work which are given a week. This is an important point, for mistakes are so often made through improper drying before the rubbing process is started, and in nine cases out of ten the varnish is blamed.

In some finishing rooms and on certain pieces of furniture it is customary to use fine sandpaper in rubbing the first two coats, but the last coat of rubbing is done with flour, pumice stone and water with a felt rubber.

Palm of the Hand for Polishing

Polishing varnish should be flowed out quite freely in order that it may level evenly and properly. When this is accomplished the usual brush marks

will be present even though a soft-haired brush may have been used. After the proper length of time has been given for drying it is rubbed with rotten stone powder and water, the "rubber" used being the palm of the hand. This method gives results which cannot be secured in any other way. Wash the surface with clean water and rub till dry with a chamois skin and then rub with a little sweet oil, again using the palm of the hand. All oil should then be moved with a rag which has been dampened with alcohol, or if you are afraid that the alcohol will affect the varnish, corn starch may be substituted.

Of course, one cannot always blame the finisher for things that go wrong, for instance, a rubbing varnish should contain the right kind of gum, and if this is lacking trouble is sure to result. A good rubbing varnish contains kauri gum or what is even better is zanzibar, which is recognized as the very hardest gum. It rubs harder, but gives a very solid foundation and will polish better, giving a finish with great lasting qualities.

Elastic Varnish for Finishing Coat

Where best results are desired, a finisher should employ a quick-drying, non-elastic varnish for all but the finishing coats, which, of course, should be of a very elastic nature. It is the custom of some

workmen to flow out a coat of varnish excessively with a brush. It will thus flow out level and evenly, but this is a mistake, because it does not give a good finish. A full brush and a quick spread is what is needed, and should be accomplished as quickly as possible. It requires years of experience to enable a man to handle varnish as it should be. Skill is not quickly acquired in this line, it takes an expert to bring best results.

Above all one must avoid all carelessness, right from the opening of the can down to the final polish. In these days of hurry and rush, much work is pushed through in record time. Under such circumstances it is not always reasonable to expect the very best work. Proper time must be given for drying if the succeeding coats are to produce a smooth durable finish. In order to hurry the drying, driers are sometimes added to the varnish. That has a tendency to injure the finished work.

It is the man behind the brush that counts. If he thoroughly understands his work and is willing to devote the time to prove his skill, so that he may be able to meet any varnish troubles which come, he is a pretty safe head for the finishing process. If he thoroughly understands his varnish he knows how to use it to the end that the best possible finish is secured.

Finishing a Case in Mahogany

By C. J. LaVallee*

The fact that the editor of this publication receives inquiries from phonograph manufacturers as to the best method of producing a mahogany finish is no surprise to me. There are hundreds of newcomers in this field. They have sprung up all over the United States and Canada. Many are inexperienced. Hence, the demand for practical pointers in the various details of manufacture, which pointers, publications like the "Canadian Woodworker" are trying to supply.

And there is no doubt that among those details none is more important than the finish. For the phonograph like the piano, is a much prized household possession. It is in the limelight on every important social occasion and a prime essential is that it has the most beautiful as well as the most permanent finish it is possible to produce.

Because of the greater difficulty of producing as well as the great demand for a mahogany finish, I shall describe what I consider the most satisfactory method of producing a mahogany finish. I might add that it is the method used by many of the leading manufacturers of phonograph cabinets and has long since passed the theoretical stage.

First, you prepare the wood by applying over all surfaces a thin coat of glue size. When this is dry, sand it smooth, for the size will have raised the grain and stiffened the fibre so that it will cut off clean instead of lying flat until the stain is applied and then raising. The result is that when the stain is applied it will raise the grain very little.

The best results will be obtained with a high grade acid or water stain. As the cases are small, the most common practice is to dip them in the stain and then sponge them so as to eliminate the "runs" and prevent the stain from raising the veneer too much,

If the instruction as to sizing and sanding has been followed, very little sanding directly over the stain will be necessary. Most experienced finishers apply a thin or "wash" coat of shellac or a good shellac substitute over the stain and then fill with a pure linseed oil paste wood filler, mahogany shade. I say a linseed oil filled because it gives a much finer and deeper finish than a filler made with an inferior oil.

As to the shade, that is a matter of taste or judgment, or of supplying what the trade demands. Most phonograph cases are finished somewhat on the brown—a little less red than was used a few years ago.

As to the subsequent finishing coats, there are two methods by which a high grade finish can be obtained. The first way is to apply a medium coat of white shellac directly over the filler. When dry follow with two coats of good rubbing and a polishing varnish, either using bright polishing or what is known as "dull rubbing." The latter can be rubbed with oil to a dull velvet finish that remains dull indefinitely, whereas bright polishing varnish may be rubbed dull, but will turn shiny in spots with handling.

The other method is to apply the varnish directly over the filler, using a good tough first coating varnish, which will sand smooth and close, and follow with two coats of rubbing varnish.

For the interiors, such as shelves, partitions, etc., most manufacturers of this class of goods use an oil stain, as this does not raise the grain of the wood and produces a smooth, good-looking finish without the necessity of sanding.

Sawguards may at times be in the way for some work, but there can be no doubt that they prevent many bad accidents.

*President, Marietta Paint & Color Company.

Selecting and Mixing Mahogany Stains

Oil Stains May Reduce Cost of Finishing But If a Rich, Permanent Color is Desired Water Stain Will Be Used—Mixing and Using Various Stains

By Bert D. Wolf

IN preparing stains for mahogany finishes the first question to decide is whether to use oil or water stains. If it is a matter of cost only and if a cheap finish is desired you will decide on an oil stain because it does not raise the grain of the wood and you can use the same strength stain on all the different kinds of woods that are used in constructing pieces to be finished in mahogany and produce a fairly uniform color on all of them, for in applying and wiping the filler on solid or veneered mahogany the surplus stain will be cleaned off so that it will match the birch, gum, maple or other woods used. All mahogany oil stains I have used or experimented with have faded. To convince yourself, it is only necessary to finish an article with oil stains and put it where the sun light will find it and you will find a vast difference in color in only a few weeks. Neither will oil stains give you that beautiful rich depth of color that is obtained by water stains.

Do not use pigment colors such as English rose lake, burnt sienna, burnt amber or Vandyke brown in trying to make mahogany oil stain as they are not soluble and form an opaque coating, or in other words a paint, and will give a muddy effect when applied on any wood as a stain. These colors are generally used for making paint tints when added to white lead and may be used to color mahogany filler.

Without a doubt the most satisfactory method to work out a mahogany oil stain to the shade desired is to dissolve the different oil soluble aniline colors to be used separately, eight ounces of aniline to one gallon of benzole or heavy naphtha in a water bath and put them in separate containers from which can be measured different quantities of different mixtures until the color desired has been made. Always make a memorandum of the amounts used so that when finished a working formula can be made from these notes. As an example, let us suppose that we have previously dissolved oil red, jet black nigrosine soluble in oil, oil orange and oil soluble, yellow each as above described and we use ten ounces of the oil red solution, eight ounces of black, three ounces of orange and two ounces of yellow and we find we have a good color, but too strong so we will reduce this with one ounce of japan dryer, one-half ounce of asphaltum, one-half ounce of denatured alcohol, two ounces of turpentine and five ounces of benzine which will give us one quart of mahogany oil stain ready for use. Oil of Mirboue may be used in place of the asphaltum if desired. Water stains undoubtedly produce the best results for mahogany finish as they are permanent in color and will give a depth of richness in tone not obtainable with oil stains that will more than offset the difference in the cost of labor in sanding the raised grain of the wood.

The average furniture factory does not use enough dry mahogany stain powder to make it worth while making their own mixtures, as different lots of anilines are different in strength and tone of color and it requires quite a little time and skill to match up the mixture so the color will be uniform.

There are today many reliable stain manufacturers

from whom one can buy extreme red and extreme brown stain powders that are uniform in color from which to work out formulas.

For your convenience I would suggest trying the following for red mahogany stain: extreme brown mahogany, six ounces; extreme red mahogany, two ounces; jet black nigrosine soluble in water, one-half ounce; bichromate of potash, one ounce; boiling hot water, one gallon.

For brown mahogany the following: Extreme red mahogany, one-half ounce; extreme brown mahogany, one ounce; jet black nigrosine soluble in water, one and one-half ounces; bichromate of potash, one ounce; boiling hot water, one gallon.

These quantities may have to be varied a little, according to the shade and strength of the stain powders made by different manufacturers.

The above formulas are for staining birch, gum or maple and should be reduced about one-half with water for mahogany veneer or solid mahogany as the filler required will darken the surface over which it is applied. If, as is often the case, the article to be stained is made partly of birch and partly mahogany, apply water with a sponge or brush to the mahogany just before dipping and the entire surface will have a uniform color when completed.

Have separate dip tanks for red and brown stain large enough to roll the largest pieces to be stained and separate drain boards to be used as covers for the dip tanks when not in use.

Allow the stain to dry four to five hours and sand the mahogany to a smooth surface, being careful not to sand through the edges and fill. For red mahogany color the filler with burnt sienna, burnt amber and Vandyke brown and for brown mahogany use Vandyke brown and drop black. Dry colors can be used but colors ground in oil are preferable as they are finer and more readily mixed. In reducing or thinning filler for mahogany it is not safe to use naphtha only but is best to use one-third turpentine and two-thirds naphtha and it may be necessary to add a little linseed oil to prevent the filler from showing grey in the pores of the wood. Allow the filler to set thoroughly and then wipe it across the grain of the wood to insure rubbing it with the pores thoroughly. Should the mahogany be soft and fuzzy it is advisable to apply a wash coat of shellac (not more than one pound of shellac to a gallon of alcohol) before sanding. After the filler has been allowed to dry from five to six hours in a dry room or twenty-four hours without the work is ready to be shellaced and varnished, sanding between coats.—American Furniture Manufacturer.

It takes 15,000 feet of lumber to build the average dwelling. Suppose the price of lumber advances \$1.00 a thousand. Suppose it advances \$2.00. Suppose it advances \$3.00. The first means an increased construction cost of only \$15.00; the second, \$30.00; the third, \$45.00. Honestly, now, would that stop anyone from building who really wanted to build.

American Manufacturer Adopts Free Insurance

Always following the most progressive policies in its dealings with its workmen and office employees. S. Karpen & Bros., long noted for their keen interest in welfare work, have recently established a new precedent in this regard and one that will be appreciated by the vast army of workmen and office employees whom it effects.

The new feature is an insurance plan by which, according to the term of service of the worker, each employee of the establishment who has been in the employ of the company for over six months is guaranteed a certain amount of insurance in the event of his death. The minimum amount is \$300, and the maximum amount \$1,000.

Canadian Phonograph Manufacturers' Association Formed

A new industrial organization was formed in Toronto recently when the representatives of twenty manufacturers met and organized the Canadian Phonograph Manufacturers' Association.

The following officers were elected: President, W. D. Stevenson, of the Starr Co., London; vice-president, O. C. Dorian, of the Pathe' Freres Phonograph Co.; treasurer, S. L. Cooke, of the George McLagan Furniture Co., Stratford; secretary, J. A. Fullerton, Toronto. A committee was formed to deal with the exporting of phonographs. It is felt, in this connection, that a wide field is open to Canadian manufacturers of phonographs for trade within the Empire. Efforts will be made with a view to produc-

ing more advantageous freight rates than those which now exist.

Oak Flooring Manufacturers Association Adopt Trademark

The Oak Flooring Manufacturers' Association, with headquarters in the Ashland Block, Chicago, has adopted a trademark, which as soon as possible will appear on each piece of flooring the members of the association turn out.

The association has sent out the following notice relative to the trademark: "The trademark has been but recently adopted and not all the members have had time to apply the mark to their product. For the next few weeks, therefore, you cannot be certain that oak flooring, which is without this quality trademark, was not made by an association mill. Since members of this association make the vast majority of all the oak flooring made in the country, what you get will probably be of official standard quality, even without the association trademark."

Standardization of Fruit Packages

The box manufacturers of the Northwestern States recently had a conference with the committee on packing, containers and prevention of loss and damage, of U. S. Railroad administration. The standardization of loading methods and fruit package containers was discussed, also, the minimum strength of box shooks used in making boxes for the various fruits was considered.

The recommendations were adopted by the committee, and it is believed that by next season the new rules for boxes will be in force.

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is the proof that we are not only PULLING FOR GOOD OLD

OAK

but also pulling for those who SELL IT—

THIS MEANS YOU.

Month by month we shall prove to the CONSUMER (Your Customer) that OAK FURNITURE—is due for a very heavy "COME-BACK."

Does your line meet the issue?

If not, it can by next season.

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Its elegance, dignity and artistic adaptability are backed by its sturdy resistance to dents and scratches. (Really a quite important point.)

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FROM RUSTY NAILS

Look at the rich, deep finish of a fine antique.

It is hard to realize that the stains the old-time craftsman used were often made from rusty nails!

But such crude methods would not meet modern demands. Speed and volume must be had as well as quality. Science long since came to the foreman finisher's aid. Today, at a fraction of the toil and trouble, he gets results that the proudest craftsman of the olden times would appreciate.

He uses with unfailing satisfaction

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SPARTAN ART WOOD
STAINS

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We are ever ready to co-operate with progressive finishers.

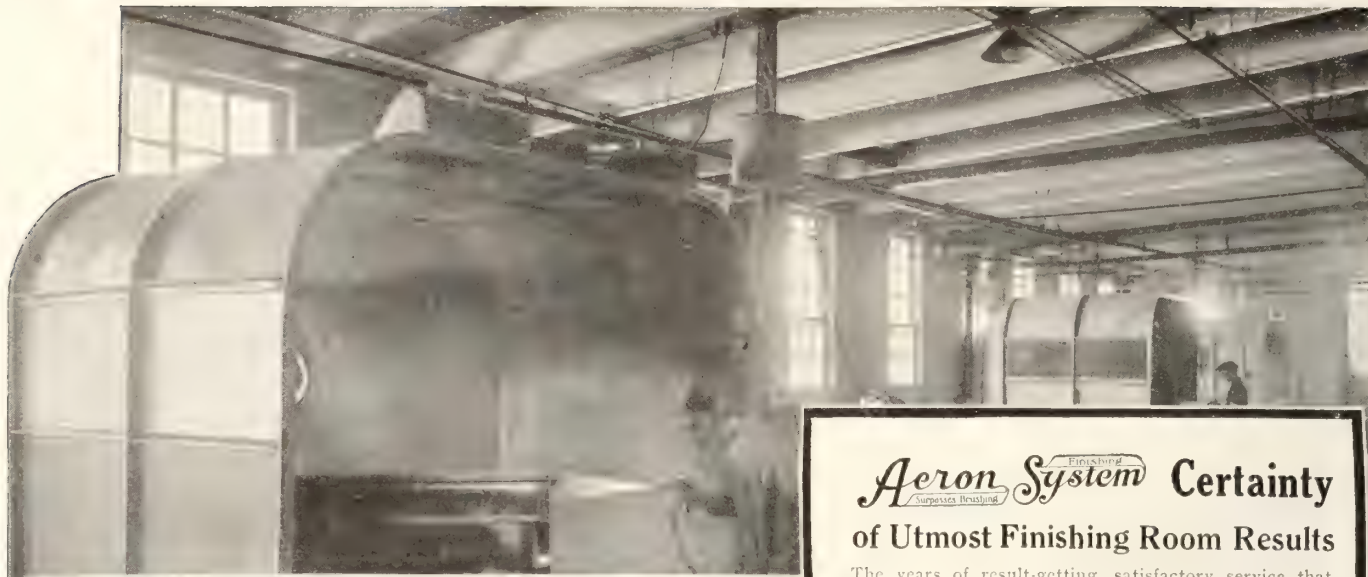
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No matter what type, size or grade of product you manufacture, nor with what kind of finishing material you coat it—the Aeron System undoubtedly is now being used on work of the same or a similar character, and will be most certain to make it possible for you to do the highest grade of work at a big reduction in costs.

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We guarantee that the process used in the manufacture of Kane Vegetable Veneer Glue, and also the dissolving with **water and caustic soda** in the usage of same by the consumer, do not infringe any patents, and particularly the patents recently construed by the Court of Appeals of the Seventh Circuit, or the Decree of the U. S. District Court at Chicago, signed August 5, 1918.

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Veneers AND Panels

Increased Efficiency in the Glue Room

Place Equipment to Eliminate Lost Motion —
Pressure for Different Size Panels Must
be Accurately Calculated

By John Welmers

The laying of veneer is today considered to be one of the most important operations that is performed in a modern furniture factory. Probably this is due to the fact that solid woods are very expensive and are hard to get, especially the figured variety. In addition the buyers of furniture and the buying public are commencing to realize that a built-up or reinforced panel is stronger and can be had with a better figure than the solid panel.

Now when prices of materials and labor are away up, and are still climbing, we must find some way to speed up. In other words, we must be more efficient. Harrington Emerson, the production expert, defines efficiency as being able to find and take the best, easiest and quickest ways to the desired things of life. Naturally, the best ways are not always the quickest ways, nor are the quickest the easiest. So we must differentiate between the standards and find the happy medium. The prevailing idea then should be to get out the most work, of the highest standard, in the least possible time and with a minimum expenditure of time and money. In other words, we must take short cuts, and there are plenty of chances in most veneer rooms to do this.

A Lot Depends on the Foreman

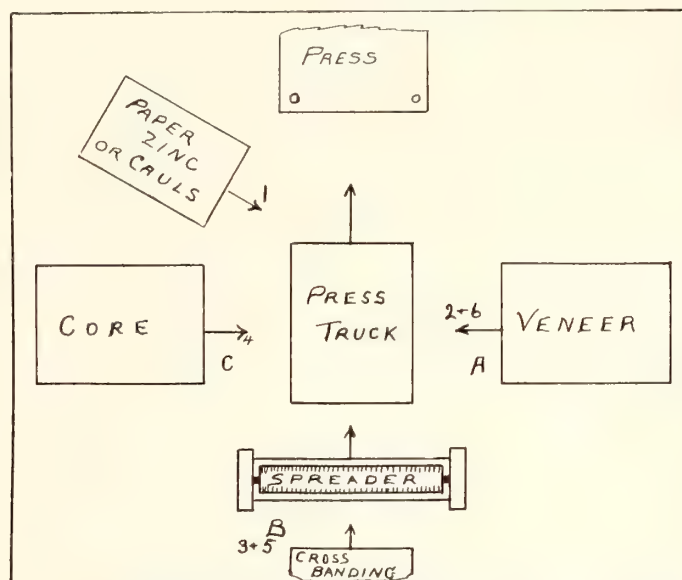
The veneer room with the most modern equipment is still incomplete if it lacks a good foreman, for good judgment is quite essential to the laying of veneers, seeing that practically fifty per cent. of the completed piece of furniture reflects in it the workmanship of the veneer department.

The type of glues must be taken into consideration, for there is a slight difference in the method of handling the stock. There are three principal glues used in the veneering trade, namely, vegetable, casein and animal. The vegetable and casein glue are both used cold, so they can be run alike, but as the animal glue requires heat, it must be handled differently, for heat must be supplied constantly until pressure is applied.

Operations in Laying Veneers

In the accompanying diagram the location of the equipment and men are shown: The men are represented by letters, and the operations by numbers, according to their sequence. For example, the man C takes a sheet of paper and lays it on the press truck, which has previously been made ready with I-beams and a heavy caul, thereby completing operation number one. Then A places a veneer face downward on the paper, followed by B, who runs a crossband

through the spreader to be placed on the truck by C or A. Other operations follow in order until the last face veneer is placed face upward on the glued crossbanding. The same process is repeated until the pile is complete. (The glue spreader is simply a machine with two corrugated iron rolls, the lower one running in a bath of glue. Most machines are equipped with an upper glue container to supply the top roll, and is fed by a pump. If the two sides of a panel are to be glued by a machine with only the lower tank, the panel is first dipped into the glue and then run through). After the pile is completed a heavy caul is laid on the top and the truck moved to the press. I-beams are placed on top and spaced to correspond with the lower ones. Pressure is then applied and



Efficient layout of glue room equipment

the retaining irons set. The pressure is then released and the load moved on a truck to the storage room.

Different Materials Between Panels

There is a difference of opinion regarding the best material to be placed between the panels. Some prefer oiled zinc, which gives satisfaction provided the oil does not penetrate the veneer sufficiently to weaken the glue joint, as I have seen happen. In addition the oil might affect the stain taking qualities of the wood, but I doubt if it would be affected seriously. Many have found a layer of paper satisfactory, for it acts as a blotter, and in the case of vegetable glue absorbs some of the caustic from the glue, thereby helping to prevent the stains. Others use cauls with paper, or greased cauls.

Warm cauls are necessary for animal glue, to supply the heat, but as heat is not needed for the cold glues the paper or zinc will suffice. There may be times when the core stock and the veneers are of unequal thickness throughout, then the cauls are necessary, but under ordinary circumstances, where all the

stock is of uniform thickness, they take up a lot of perfectly good space which might just as well be filled in with extra panels, thus saving from 15 to 25 per cent. in the running expense of the department.

Warm the Core in Five Ply

A good way to bake 5-ply panels with animal glue is to warm the core stock, if it is thick enough to retain some heat, for not enough heat emanates from the warm caul to insure a good joint between the core and the crossbanding.

It will be found necessary to resurface wooden or fibre cauls occasionally, for the constant pressure to which they are subjected tends to make them thinner in some parts than others. That is sometimes the cause of sanding through the face veneers.

Where the crossbanding is made up of small pieces taped together, it is advisable to lay them with the tape next the core, for more than one case is on record where the tape separated and caused blisters underneath face veneer.

Correct Pressure Very Important

It is important that the correct pressure is applied to the panel, for over or under pressure tends to make poor joints. I have seen soft cores decreased in size because too much pressure was applied. The blame was placed on the planer man. Upon investigation it was found that instead of getting 100 pounds to the square inch they were really getting 250 pounds, so it is obvious that it is necessary to calculate the pressure given. About the only press upon which the pressure can be readily calculated is the hydraulic press. The gauge forms the basis for the calculation.

The area of the ram or piston multiplied by the pressure per square inch gives the total pressure ex-

erted by the ram. The total pressure exerted divided by the area of the panel in square inches gives the pressure exerted on the panel in pounds per square inch. Generally the proper pressure to use is recommended by the glue manufacturers. So if the desired pressure is known, the formula worked out by the Forests Products Laboratory, Madison, Wis., which appears elsewhere in this issue, will be found very useful.

For the convenience of the users of the hydraulic press the two accompanying tables will prove helpful. As the pressure on these charts is calculated on a 100 pound to the square inch panel pressure basis, it will be necessary to add or subtract in proportion. To illustrate, supposing a pressure of 150 pounds is desired, then one-half as much should be added to the figure given in the table.

Gauge Pressure for 10 in. Ram

Panel Pressure = 100 lbs. per sq. in.

Size	20	26	32	38	44	50	56
10	255	330	406	481	556	632	707
14	357	463	570	677	784	891	998
18	458	597	735	874	1012	1150	1289
22	560	730	900	1070	1239	1409	1586
26	662	864	1065	1266	1467	1669	1871
30	764	997	1230	1463	1696	1929	2162
34	866	1127	1385	1646	1907	2167	2422

Gauge Pressure for 12 in. Ram

Panel Pressure = 100 lbs. per sq. in.

Size	20	26	32	38	44	50	56
10	177	230	283	336	389	442	495
14	248	322	396	470	545	619	693
18	318	414	509	605	700	796	891
22	389	506	622	739	856	973	1089
26	460	598	736	874	1011	1149	1287
30	530	690	849	1008	1167	1326	1485
34	601	782	962	1142	1322	1503	1683

Converting St. Francis Basin Hardwoods

Choice Southern Hardwoods Manufactured in the Efficiently Equipped
Plants of Penrod-Jurden Co., Memphis, Tenn.

If one were to visit the timber limits of the Penrod-Jurden Company, Memphis, Tenn., located right in the very heart of the famous St. Francis Basin, he could not help but be impressed by the excellence of the stand from which this firm selects the logs to feed their veneer and saw mills at Helena and Penjur, Arkansas. A logging railroad shaded by "giants of the forests" leads in to where the logging operations are being conducted. Here the equipment is found to consist of steam skidders, rapid loaders, locomotives etc. The elimination of teams, through the use of steam, enables logging to be carried on at all seasons, thus ensuring a steady supply of raw material.

The logs are loaded on cars and pulled to the main line where they are picked up and carried to the mills. The unloading is facilitated by a number of derricks which pick up the logs and deposit them in huge piles in the storage yards.

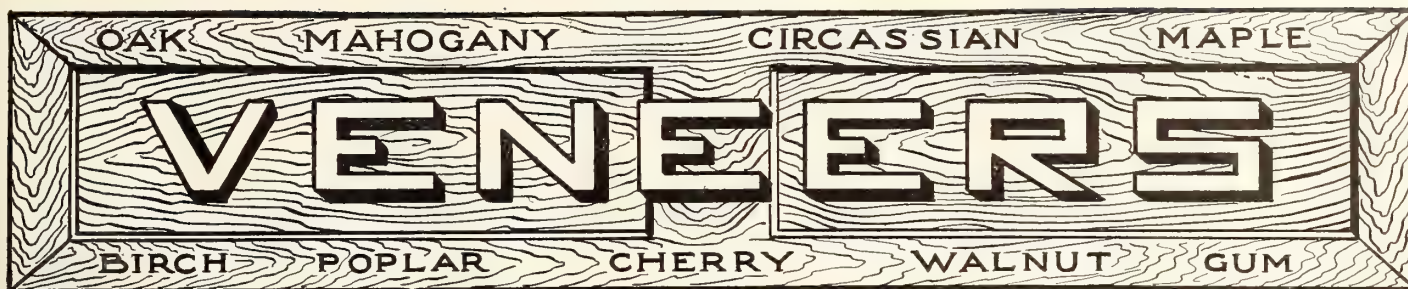
The logs selected for veneers are taken from the piles, boiled and barked in the usual manner and are then ready for the lathes. Three lathes are employed in turning out rotary stock, one having a cutting length of 104 in., another 102 in., these machines are the best procurable and turn out veneers that are smooth and evenly cut. The plant is electrically equipped throughout, every machine being motor driven.

After being trimmed and cut to size the stock is dried, the drying being one of the most important

(Continued on page 72)



Unloading logs at Penrod-Jurden storage yards



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Mahogany Lumber Mahogany & Walnut Veneers

Located close to the source of supply down in New Orleans, we have an up-to-date, well-equipped mill, exclusively employed in cutting into Lumber and Veneers the fine Mahogany logs our ships bring in direct from the tropics.

The Freiberg Lumber Company

CINCINNATI, OHIO

NEW ORLEANS, LA.

NATIONAL VENEER & LUMBER CO. ROTARY-CUT POPLAR

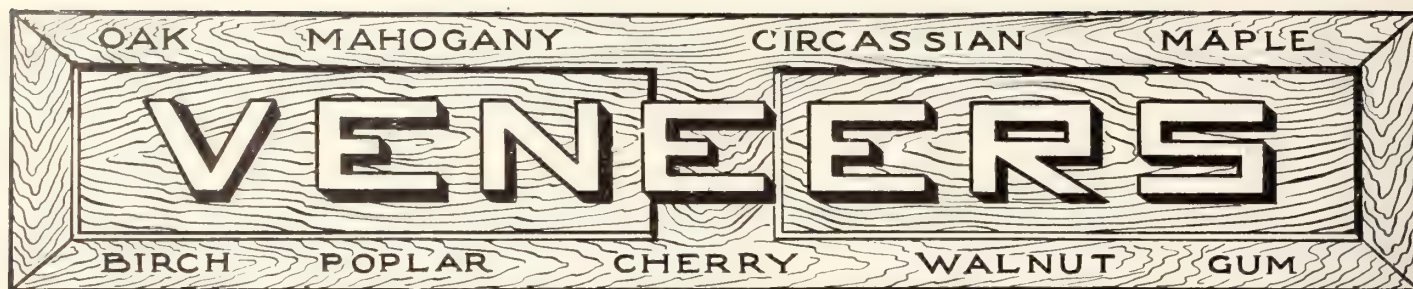
Large Sizes, up to 10 Feet in Length

AMERICAN WALNUT VENEER
Long Wood and Butts

QUARTERED WHITE OAK

1635 West Michigan Street

INDIANAPOLIS, INDIANA



Wood - Mosaic Co.

NEW ALBANY, - - IND.

WALNUT

Lumber - Dimensions - Veneers

If you are in the market for anything in Walnut, let us figure with you. We have cut three million feet of Walnut in the last year, and have a good stock of all thicknesses dry. We can also furnish Walnut dimension—**Walnut Veneers**. We have a large stock of veneers, plain, stripe figured and stump wood.

Wood-Mosaic Co., Inc.

NEW ALBANY, - - IND.



HONDURAS

MAHOGANY



Lumber

Plain and Fancy

VENEERS

Mahogany, Walnut
Birch, Ash, Poplar

Rotary, Sliced or Sawed in all
Thicknesses

Built up Stock in
Birch and Maple

Send for Samples



George Kersley

140 Chatham Street, Montreal



QUALITY

SERVICE

JOHN N. ROBERTS & COMPANY

MANUFACTURERS OF

American Walnut

Exclusively

Woodruff and River

New Albany, Ind.

FIFTY-TWO YEARS IN OPERATION, BUT -

ahead of the times in equipment. Business institutions of many years standing divide themselves naturally into two classes. One group through too long moving in the same groove eventually dies of dry rot, in many cases behind the times in methods and equipment. The other absorbs and applies knowledge with each year of

Northern Grown Oak

experience and so keeps constantly many paces ahead of the procession. The evidence of our participation in the second group is concretely shown in our plant and reputation.

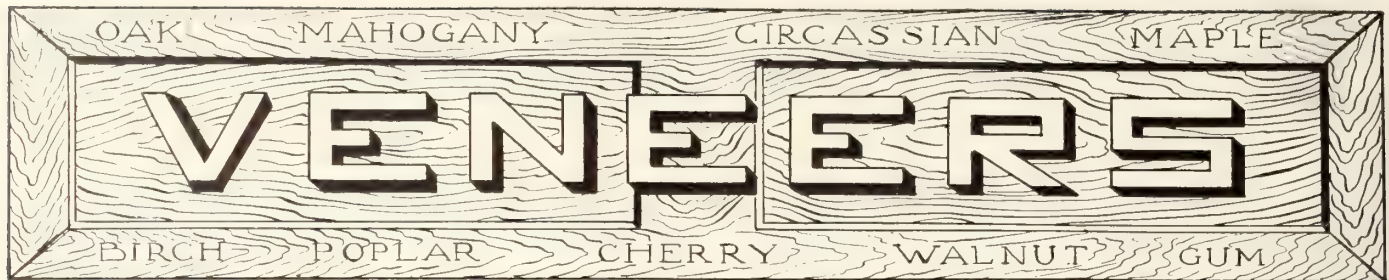
American Beauty Walnut

Those founding the business originated and operated the first band sawmill used in the United States. Today we are in many things that make for quality and efficiency just as far ahead relatively as that mill was in the days gone by. In short, the experience acquired through fifty-two years of operation has not been left to accumulate dust in the office files. It has been applied by the successive managements, who, all in the same family, have been anxious to maintain, each for his generation, an equal standing with the generation which preceded him. Today the HB brand is recognized nationally as the stamp of quality in the goods and in all the services going into each delivery of the goods to your plant.

HOFFMAN BROS COMPANY

FORT WAYNE INDIANA





Veneers and Panels

PANELS

Stock Sizes for Immediate Shipment. All Woods. All Thicknesses. 3 and 5 Ply or made to your specifications

VENEERS

5 Million feet for Immediate Shipment
Any Kind of Wood Any Thickness

We are Chicago agents for WOCO FIR PANELS, and carry a full and complete line in all stock sizes and all thicknesses at our Chicago warehouse for immediate shipment.

J. J. NARTZIK

1966-76 Maud Ave., CHICAGO, ILL.

Birch Veneer

1-20, 1-16, 1-8

We can ship immediately
a crate or a carload. Also
a complete stock of panels.

GEO. L. WAETJEN & CO.

MILWAUKEE

WISCONSIN

Buyers of Veneers and Panels

will find it to their advantage to purchase from the manufacturers and dealers whose advertisements appear in this publication. They are progressive firms—the leaders in the business, which is a guarantee of good service and prompt attention to orders.

Give your business to the man who will spend his time and money to get in touch with you. He deserves it—if his stock and prices are right.

Important Announcement

We have just acquired

A substantial working interest in one of the largest and best mills in the south making a specialty of high grade

ROTARY CUT GUM

We offer the output of this mill to the trade, and can furnish both sheet stock and dimension sizes in

Drawer Bottoms Glass Backs
Back Panels Centers, Etc.

Direct shipments from mill.

Also large stock of standard thicknesses and sizes is carried in our

Chicago Warehouse

for quick shipment.

You are not dealing with a middleman, but get the advantage of the manufacturers' prices and our personal supervision.

Veneer Manufacturers Co.

225 N. May Street, CHICAGO, ILLINOIS

Western Office, 516 Lumber Exchange, MINNEAPOLIS, MINN.

Mills at GLADSTONE, MICHIGAN

The Northwestern Cooperage & Lumber Co., Gladstone, Mich.

THE HOME OF "PEERLESS" STANDARD BRAND PRODUCTS

Manufacturers of

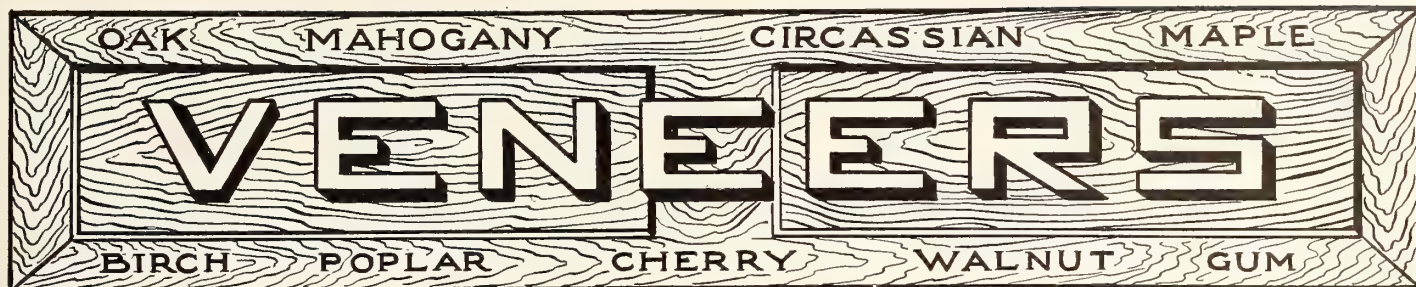
"PEERLESS" ROTARY CUT VENEERS

in Birch, Elm, Basswood, Maple, Ash and Beech for all purposes

Also hoops, liners and staves for manufacture of packages

Also "Peerless" Rock Maple, Beech and Birch flooring; Hemlock lumber; Lath, etc.

"Peerless" products are standard everywhere and you are always exercising Safety First in using them. Try us next time.
(When writing mention Canadian Woodworker)



Poplar and Walnut Veneers

We specialize in large size poplar veneers as we have extra fine poplar logs. We can cut veneer up to 10 feet square.

Our walnut veneer cannot be beat, both in plain and figured wood.

Write us for prices.

Central Veneer Company
Winter Ave. and Belt R. R., INDIANAPOLIS, IND.

Sovemanco

Southern Veneer Manufacturing Co., Inc.
LOUISVILLE, KY.

Manufacturers of all kinds
of Sawed, Sliced and
Rotary-cut

VENEERS

Carrying a large stock of
selected Mahogany,
Figured and Plain Walnut, Walnut
Butts, Sawed and Sliced Quar-
tered Oak and Sycamore and all
other native woods.

**1,000,000 Feet Quartered Red
Gum to select from**

CAN fill rotary-cut gum orders promptly

WE Respectfully solicit your inquiries

In the Rush of Increasing Demand for Veneers

The natural tendency is for manu-
facturers to strive toward a greater
output often at the expense of
quality.

This is a mistake which the Law-
renceburg mills are carefully
guarding against and buyers may
be sure that in ordering "BATES-
VILLE QUALITY" Veneer they
are getting goods manufactured
in strict accordance with that
standard of quality maintained for
so many years.

Batesville Lumber and Veneer Co.
LAWRENCEBURG, IND.

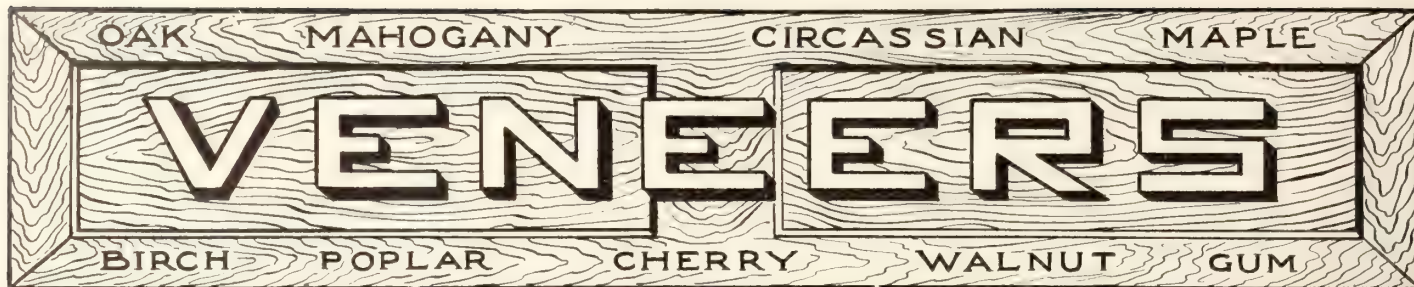
Superior Quality Sawed Quartered White Oak Veneer

1/20" and 1/16"

is our "hobby"

And we give SPECIAL SERVICE
on L/C/L Orders

Memphis Veneer & Lumber Co.
MEMPHIS, TENN.



What Your Order Means to Us—

It means a chance to prove our service to you. From our excellent stock of Sawed and Rotary Veneers, Poplar Cross-banding and Sheet Stock, Walnut Butts and Longwood, Quartered Oak, etc., we can fill your order exactly as you desire. Quality of highest grade. You'll appreciate the prompt manner in which your order is filled. Send us your enquiries.

W. T. Thompson Veneer Co.
Edinburgh, Indiana - U.S.A.

The Dean-Spicker Co.

Manufacturers of

VENEERS

OAK - MAHOGANY - WALNUT
AND
LUMBER
22nd St. and So. Crawford Ave.
CHICAGO

"The Kiln Drying of Lumber"

A Practical and Theoretical Treatise

By HARRY DONALD TIEMANN, M.E., M.F.

In charge, Section of Timber Physics and Kiln Drying Experiments of the U. S. Forest Service. Special Lecturer in Wood Technology and Forestry, University of Wisconsin. Forest Products Laboratory, Madison, Wisconsin.

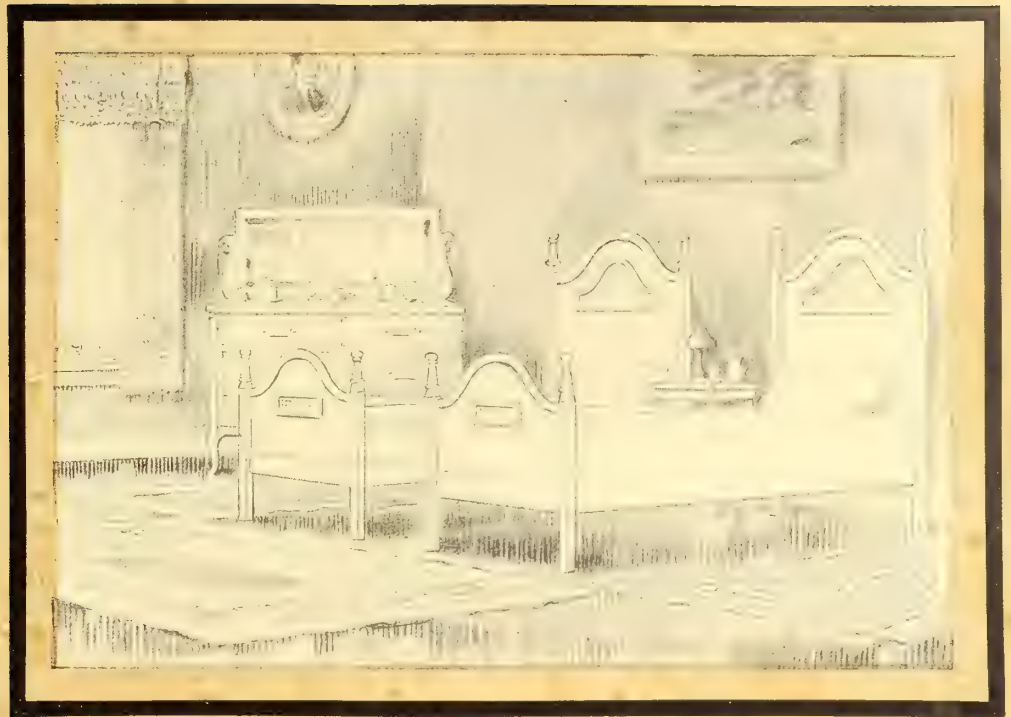
About 280 pages.

The value of a technical knowledge of *kiln drying* is self evident. This book, as does no other upon the market, gives the reader the most recent and most clearly expressed information. The text and illustrations guide the way to the most efficient methods of work.

Price \$4.00

Woodworker Publishing Co., Limited

345 Adelaide Street West, Toronto



"Birdseye" for the Exquisite Bedroom

BIRDS-EYE MAPLE sales are increasing every year. The modern home owner combats monotony in trim and furniture with variety and in this endeavor the dainty beauty of birds-eye makes its selection for at least one room certain.

Recognizing this sure market our organization has been built up as headquarters for the choicest birds-eye veneer obtainable. Our plant is equipped and our employes are especially trained to make the production of BeVeCo birds-eye veneers an art, not merely a job.

Service to you is guaranteed by an always full stock of *birds-eye* and *plain maple* and *birch veneers*. It is our hope that each customer may ultimately feel sure of our courteous, efficient handling of his every order.

BIRDS EYE VENEER COMPANY

E S C A N A B A M I C H I G A N

Not How Cheap, But How Good

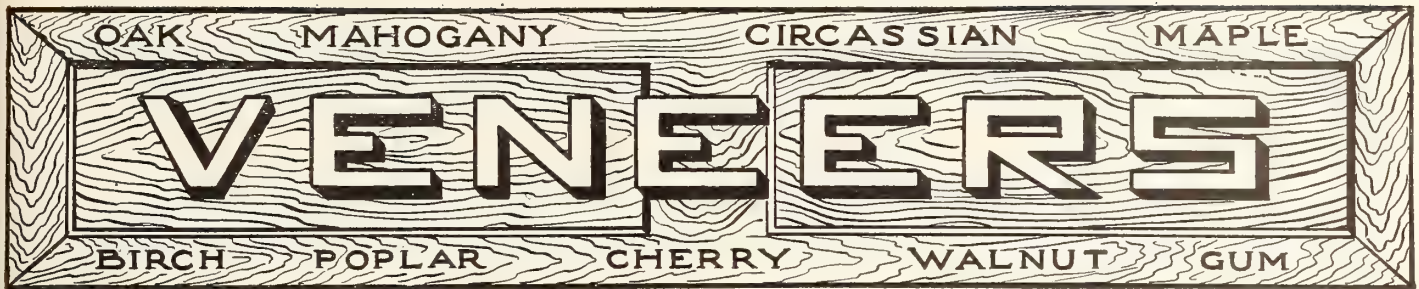
THERE are plain reasons why it will pay you to consult us always when in need of birds-eye maple, plain maple or rotary cut birch veneers. Not only do we limit our manufacture to the highest grade of product but we strive toward a constant co-operation with our customers so that the merit of BeVeCo veneers, through our efficient, prompt and courteous handling of customers' orders, will contribute to the fullest extent in helping each customer build up his own reputation for goods of merit.

All our veneers are from prime *veneer logs*, not *woods run logs*, grown in northern Michigan. When you place your order with us you are absolutely certain of getting veneer made from the cream of the best logs known to the veneer business, a certain guarantee of beauty, permanence and uniform refinement in appearance.

BIRDS EYE VENEER COMPANY

ESCANABA, MICHIGAN

BeVeCo
VENEERS



VENEERS of QUALITY **ROTARY CUT—MACHINE DRIED**

The following Stock on hand ready for shipment;

QTD. WHITE OAK		SAP GUM		ASH	
30,000'	4/4 No. 2 Com. & Better	205,000'	4/4 No. 1 Com. and Selects	15,000'	4/4 F.A.S.
		250,000'	4/4 No. 2 Com.	30,000'	4/4 No. 3 Com.
		175,000'	5/4 No. 1 Com. and Selects	15,000'	5/4 No. 3 Com.
PLAIN WHITE OAK		165,000'	4/4 No. 3 Com.	19,000'	8/4 No. 3 Com.
30,000'	4/4 No. 1 Com. and Selects	75,000'	5/4 No. 2 Com.	15,000'	5/4 No. 2 Com.
75,000'	4/4 No. 2 Com.	15,000'	6/4 No. 2 Com.	36,000'	8/4 No. 2 Com.
		30,000'	5/4 & 6/4 No. 3 Com.		
ELM		PLAIN RED GUM		SOFT MAPLE	
30,000'	12/4 Log Run			15,000'	12/4 Log Run
20,000'	6/4 Log Run	15,000'	4/4 F.A.S.		
50,000'	4/4 No. 2 and No. 3 Com.	129,000'	4/4 No. 1 Com. and Selects	PECAN	
				14,000'	4/4 Log Run

We have four million feet of dry lumber on our yard at Helena, Arkansas, ready for prompt shipment

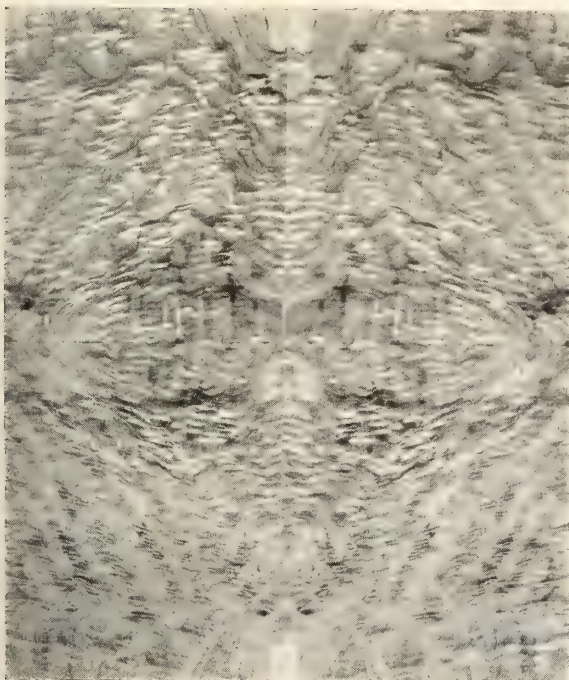
Your Orders will be given "P-J" Service

We solicit your inquiries

General Offices
 Memphis, Tenn.

PENROD-JURDEN COMPANY

Mills
 Penjur and Helena, Ark.



Walnut Lumber For Sale

	FAS				
	6" to 9 1/2"	10" & up	Selects	No. 1 Com.	No. 2 Com.
1/2"	20,000	8,000	.....	30,000	5,000
5/8"	25,000	20,000	.....	8,000	3,000
3/4"	30,000	4,200	.....	13,000	3,500
4/4"	40,000	7,600	5,000	35,000	23,500
5/4"	35,000	2,300	2,500	10,000	25,000
6/4"	28,000	4,800	7,500	14,500	22,500
8/4"	21,500	1,500	16,600	23,200	42,500

WRITE US FOR PRICES

We also have everything in Walnut Veneers.
 Write us for samples and prices.

Penrod Walnut and Veneer Co.
 Kansas City, Missouri, U. S. A.



Veneer lathes in Penrod & Jurden plant. All equipment motor driven

operations performed in turning out high grade veneers. Four mechanical dryers take care of this end of the process, a Philadelphia Textile dryer, a Smith roller and plate dryer and two kilns, the latter being equipped with suction fans to draw off the moisture laden air. All of these dryers are necessary to produce flat, thoroughly dry veneers from stock of different thickness.

A careful study has been made of the results obtained from each kiln and each particular dryer is used only for that kind and thickness of material for which it is best suited. Recording thermometers are attached to each kiln and tests for moisture are made hourly. This careful check on the drying operation not only ensures veneers that are dry but enables

stock to be dried to any percentage of moisture content that may be desired.

In the packing room the veneers are crated and bundled but not before they have been thoroughly inspected. This inspection is one part of the "P-J Service," a service that ensures a product of high, uniform quality.

Lumber from Southern hardwoods is manufactured in all grades and thicknesses, and from 5,000,000 to 6,000,000 ft. is usually carried in stock.

The president of the Penrod-Jurden Company, is R. L. Jurden, who is incidentally a past-president of the American Hardwood Manufacturers' Association. The vice-president is J. N. Penrod. G. E. Jurden and E. B. Snyder are respectively treasurer and secretary.



Drying veneers in mechanical dryer

Saws Cause 892 Accidents, 1918

The tabulation of the causes of accidents makes an interesting study, and may be of very material assistance to both workmen and employers toward avoiding such accidents in the future. Mechanical causes were responsible for 31.70 per cent. of all accidents. Among these the following were the chief contributors: Saws, 892, of which 3 were death cases; planers, jointers and edgers, 260; shapers, moulders, and headers, 121; lathes, 891; presses, 813; abrasive wheels, 781; belts, pulleys, chains, and sprockets, 390, of which seven were fatal cases; shafting, couplings, set screws, etc., 75, of which 6 were fatal cases; and hoisting apparatus, 785.

Hot and inflammable substances caused 1,018 accidents; falling objects, 1,56, and the handling of objects, including loading, carrying, rolling, piling, etc., caused 7,083 accidents; falling of the workmen caused 2,627; runaway animals caused 98.

It is very evident that a very large percentage of the accidents that happen could be prevented by a little care on the part of those concerned.

Nothing Strange



will be found in our service to you. Prompt shipment of excellent Veneers, Mahogany, American Black Walnut, Quartered Oak, Figured Quartered Gum and plain woods exactly as if you had carefully chosen them yourself. In fact, if you so desire, you may visit our large bright stock rooms and make your own selection from our entire stock. Write us regarding your needs.

Toronto Veneer Company Limited

1100-1104 Queen St. West.

Toronto, Ontario

WALNUT and Quartered VENEERS

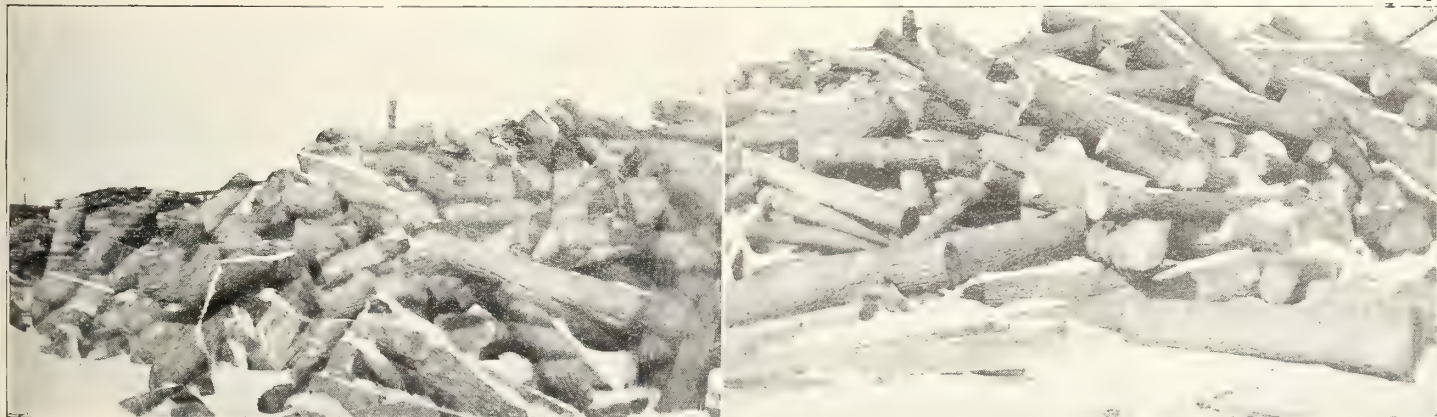
White Oak

AND LUMBER

Prompt delivery

LONG-KNIGHT LUMBER COMPANY

INDIANAPOLIS, IND.



Calculating Pressure on a Hydraulic Veneer Press

Results of experiments at the Forest Products Laboratory, Madison, Wis., indicate that an excess or lack of pressure in gluing plywood tends to weaken the glue joint materially. This fact suggests the importance of knowing the amount of pressure per unit area which is being applied to any panel.

The pressure gauge reading must vary with the size of the panels if the same amount of pressure per square inch is to be secured. For example, if the same gauge pressure is applied on panels 10 by 36 inches and 36 by 40 inches, the pressure per square inch will be approximately four times as great in the first case as in the second.

The formula for the calculation of pressures may be written:

$$G = \frac{P \times A}{R} \quad (1) \quad \text{or} \quad P = \frac{G \times R}{A} \quad (2)$$

where G = gauge pressure in pounds per square inch.

P = pressure on panels in pounds per square inch.

R = area of piston or ram in square inches.

A = area of panel in square inches.

To illustrate the use of the formula, let the following case be assumed: On a hydraulic press with a 10-inch piston, what pressure gauge reading is necessary to secure 75 pounds per square inch on panels 24 by 48 inches? Use formula as in (1).

$$G = \frac{P \times A}{R}$$

Here G = gauge reading required.

$P = 75$.

$A = 24 \times 48$ or 1152 sq. ins., (area of panel).

$R = 3.1416 \times 52$ or 78.54 sq. ins. (area of piston).

Thus $G = \frac{75 \times 1152}{78.54}$ or 1100 lbs., the required gauge reading.

Suppose the operator of the press should use the same gauge reading of 1100 pounds in pressing panels 8 by 36 inches. What would be pressure on the panels in pounds per square inch? Here use formula as in (2).

$$P = \frac{G \times R}{A}$$

P = pressure actually secured on panel.

$G = 1100$.

$R = 78.54$.

$A = 8 \times 36$ or 288.

Then $P = \frac{1100 \times 78.54}{288}$, or 300 pounds per square inch, which is four times that used on the larger panels.

A table, showing gauge readings to be used for all sizes of panels manufactured and for the different pressures used, may be computed, and placed near the press where the operator may see at a glance the gauge reading required for each run of panels. It is advisable to check the accuracy of the pressure gauge occasionally.

To determine the exact pressure secured, the weight of the platen to which the pressure is applied must be taken into consideration. For practical purposes, however, it may be omitted from the calculation, as inaccuracies in the gauge reading, etc., may

account for much larger errors. When included, the formula becomes:

$$G = \frac{P \times A}{G \times R} \text{ plus or minus } \frac{W}{R} \quad (3)$$

$$\text{or } P = \frac{G \times R}{A} \text{ minus or plus } \frac{W}{R} \quad (4)$$

Where W = weight of lower platen plus weight of panels or upper platen alone, as the case may be. The sign of the last member of equation (3) is plus when the pressure is applied by the lower platen, and minus when applied by the upper. In equation (4) the reverse is true.

Maintaining Glue at Correct Temperature

Animal glue that has been heated too high is weak and if an excessive amount of heat has been applied it is practically worthless. Many of the defects or weaknesses that occur in the glued parts of furniture are due to glue that has been spoilt in cooking and subsequent heating. To secure the best results, fresh glue should be prepared each day and only sufficient glue for the day's run should be prepared at one time. If this practice is followed and the temperature of the liquid is carefully regulated and controlled one can feel certain that the full strength of the glue is being utilized.

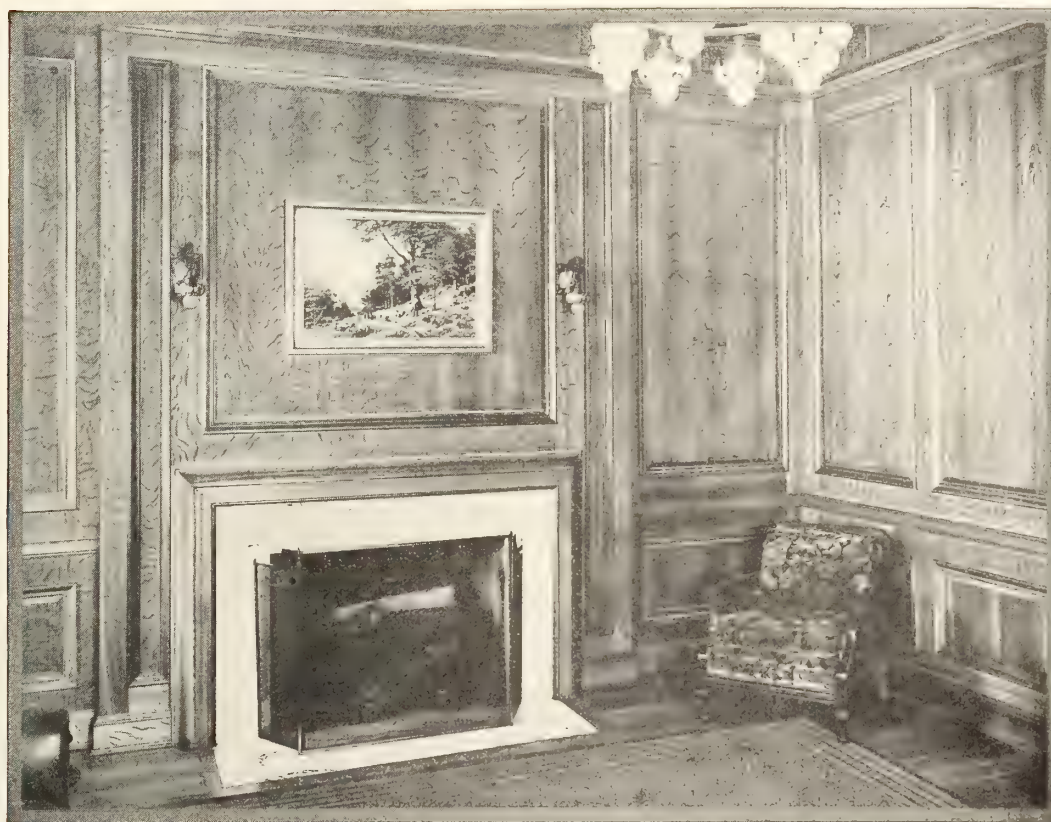
Many experiments have been made to determine the best working temperature for animal glues. Depending to a certain extent on the grade of glue tested, the best working temperature has been found to be from 125° F to 140° F. When the glue is heated above 140 degrees it commences to lose its adhesive properties and the higher the temperature above this point the weaker the glue.

In most shops where animal glue is used it has been found difficult, if not impossible, to accurately regulate and control the heat of the glue pots. The heat of the glue has to be guessed at and, in many instances, the glue is unknowingly maintained at a temperature in excess of 140 deg. F. To obviate this uncertainty and to ensure the safe, economical heating of glue many up-to-date manufacturers are installing the electric glue heater. These heaters, which are made in sizes ranging from one pint up to fifty gallons, are so designed that the correct degree of heat is maintained at all times. Three heats are provided, high, medium and low. The high and medium are for rapid heating and cooking, while the low heat maintains the correct working temperature and eliminates all possibility of the glue being over-heated. In addition evaporation is reduced to a minimum and a considerable saving in glue effected.

Industrial Loan to Toy Factory

Based upon the recommendation of the Industrial Commissioner and his Board, the Provincial Cabinet of B. C., recently passed an Order-in-Council authorizing financial assistance to Q. A. Gosling, a returned soldier, who operates a toy factory at Murrayville, B. C., under the trade name of the Murrayville, B.C. Toy Company, to the extent of \$4,000 under the terms of the Act passed at the last session of the Legislature. This loan is to be applied to the cost of constructing an addition to his present premises, and the provision of additional plant, the purchase of raw materials and the discharge of his liabilities.

This is the first loan actually granted out of the industrial fund of \$2,000,000.



**For Effective Interiors
N.B. Quality Veneer**



**WRITE FOR SAMPLES
AND PRICES**

THE character, quiet elegance and dignity of this room is due to its handsome panelling of fumed oak.

The dominant factor in this woodwork is the N. B. Quality Oak Veneer. It shows to good advantage the fine figure and soft texture of our quartered oak veneer.

When effective interiors are desired panels of N. B. Quality Veneer make certain the success of the finished room.

Concentrate Your Purchases and Save Money

Through Buying

Sliced Red Gum and Rotary Cut Gum Veneer.
Sawed and Sliced Ash, Poplar and Gum Grand Piano Rims.
Sawed and Sliced Quartered Oak.

In Cars with Band Sawed Hardwood Lumber

Carload buyers get closer prices, save freight on local shipments and eliminate damaged goods.

NICKEY BROTHERS, INC.

MEMPHIS, TENNESSEE

News of the Trade

J. A. Desriviers, Gignes Ave., Ottawa, is building an addition to his planing mill.

Stanley Fields, Cape D'Or, N.S., has commenced work on a four-masted vessel.

The Toronto Feather & Bedding Supply Co., Toronto, Ont., were recently registered.

Comte & Bernier were recently registered in Montreal as manufacturer of phonographs.

A company known as the Toronto Wood Finishing Co., was recently registered in Toronto.

The Kennedy Sash & Door Co., Vancouver, B.C., are building a factory at a cost of \$10,000.

The Smith Doll & Toy Co., Limited, Dunnville, Ont., have been granted a Dominion charter.

Etheridge Bros. were recently registered at Montreal as manufacturers of toys, furniture, etc.

The Brett Mfg. Co., Winnipeg, Man., manufacturers of incubators, are building a \$20,000 factory.

The Alaska Bedding Co., Limited, Winnipeg, Man., are making an addition to their factory. Cost \$7,000.

O. E. Wood, carriage manufacturer, Winnipeg, Man., is making an addition to his factory, at a cost of \$7,000.

The Pitt River Shingle Mill at Port Coquitlam, B.C., was recently burned to the ground. The loss is about \$30,000.

The Ideal Bedding Co., Limited, Toronto, Ont., are building a two-storey brick addition, 250 ft. by 75 ft. Cost \$75,000.

J. & W. Duncan, Limited, wholesale and retail lumber dealers, Montreal, P.Q., are erecting a planing mill and office to cost \$11,000.

The Dominion Lumber & Coal Co., 265 King St. E. Hamilton, Ont., are erecting and equipping a planing mill. Cost about \$10,000.

Meakins & Sons, Hamilton, Ont., manufacturers of brushes and woodenware, are making an addition to their factory. Cost \$8,000.

W. H. Clements, who has been conducting a woodworking and blacksmith business at Warsaw, Ont., has disposed of the latter business.

Chapman's, Limited, Verdun, P.Q., have been incorporated to manufacture and deal in furniture and builders' supplies. Capital \$100,000.

The Twin City Separator Co., Winnipeg, Man., manufacturers of fanning mills, are constructing a three-storey brick factory and warehouse.

The Murrayville Toy Co., Murrayville, B.C., contemplate making a \$6,000 extension to their plant. G. A. Gosling is manager of this company.

A meeting of the shareholders of Holmes Hogue, Ltd., Montreal, P.Q., box manufacturers, has been called by the liquidator, J. G. Duhamel.

The Emerson Manufacturing Co., Winnipeg, Man., manufacturers of separators, fanning mills, etc., are making a large addition to their Winnipeg plant.

The woodworking plant owned by the late John Millen, Toronto, is being disposed of. The Toronto General Trusts Corporation are acting as agents.

Work is progressing rapidly on the new piano action factory for J. M. Loose & Sons, Toronto, Ont. The building will be four storeys, 55 x 125.

Robin Freres, 135 Carrieres St., Montreal, manufacturers of lasts, are making an addition to their factory. A dry kiln and other equipment is being installed.

Harry Steven, Limited, Verdun, P.Q., has been incorporated to manufacture and deal in bowling alleys, pool and billiard tables and accessories. Capital \$49,900.

The plant of the T. J. Moore Novelty Co., Warton, Ont., was partially destroyed by fire. Damage to the extent of \$3,600 was done. Repairs will be proceeded with at once.

The Fisher Body Co. of Canada, Limited, Walkerville, Ont., are erecting a factory in Windsor. The building will be 128 x 132 feet, and will cost in the neighborhood of \$350,000.

The sash and door factory of the Lemon-Gonnason Lumber Co., Limited, Victoria, B.C., is being enlarged and extended. Among the equipment being added is three new tenoning machines.

The assets of Paul Demers, sash and door manufacturer, Montreal, were sold by auction, on October 8. The factory, machinery, and other property were purchased by Mr. Guimont, Montreal.

The box factory of Leigh & Sons, Victoria, B.C., is very busy. Boxes are being turned out at the rate of one thousand a day. This plant is run in connection with their sawmill at Victoria, B.C.

Among recent incorporations in British Columbia are the Coast Box Co., Limited, the Kelly Lake Lumber Co., Limited, the Thomas Gwilt Shingle Co., Limited, and Western Hemlock Mills, Limited.

The Canadian Fabrikoid Limited, Montreal, P.Q., were recently incorporated with a capital of \$3,000,000. G. Barclay and A. Knachbull-Hugessen, barristers-at-law, Montreal, were among the incorporators.

The town council of Waterloo, P.Q., will shortly submit a by-law to the ratepayers authorizing a loan of \$10,000 to the Roxton Mill & Chair Mfg. Co., Limited, for the purpose of building an addition to their factory.

Northern Quebec Co., Limited, Quebec, P.Q., has been incorporated to manufacture and deal in lumber, pulp and other wood products. Capital \$3,400,000. George Parent, Quebec, P.Q., is one of the incorporators.

Canada's fire loss for August, 1919, is estimated at \$1,374,495, compared with \$3,110,445 in August a year ago. The total for the eight months of the present year is \$15,856,721, or less than half of the total fire loss for 1918.

Peter Bodgen, Kitchener, Ont., is erecting a furniture factory. A site has been secured and a temporary two-storey building 32 ft. by 60 ft. is being built. Later a larger factory will be put up on a site nearer the railway.

The name of the British Government Timber Buyer has been changed to that of the Imported Lumber Disposal Section, Board of Trade, London, England. Mr. S. C. Denman, Montreal, is the representative in Eastern Canada.

A. J. Reach & Co., Brantford, Ont., manufacturers of sporting goods, are building a two-storey addition to their factory. The new building will be 59 ft. by 101 ft., of pressed brick construction, and will cost in the neighborhood of \$28,000.

The Sims-Till Mfg. Co., Limited, Toronto, Ont., have been incorporated to manufacture and deal in all kinds of merchandise, capital \$60,000. This firm secured premises on Brock Ave., Toronto, and is manufacturing a line of folding davenport.

The Marks-Hanley, Limited, Ottawa, Ont., have been incorporated to carry on business as lumbermen, saw and planing mill operators and manufacturers of woodenware. Capital \$15,000. E. Marks and E. A. Hanley, of Ottawa, are two of the incorporators.

The overseas demand for phonographs appears to be strong. According to recent reports E. A. Widman, President of the Pathe' Freres Phonograph Company of the United States, returned to New York from Europe with contracts totalling \$100,000,000.

Warren & Son, Limited, Woodstock, Ont., have been incorporated to manufacture pipe organs, pipe organ parts, musical instruments and musical cabinets. Capital \$200,000. F. R. Warren and S. R. Warren, of Woodstock, organ manufacturers, are two of the incorporators.

Legare Automobiles of Joliette, Limited, Joliette, P.Q., have been incorporated to manufacture and deal in automobiles, motor trucks, carriages, and other vehicles. Capital \$100,000. J. H. Fortier and P. W. Fortier, manufacturers, of Quebec City, are two of the incorporators.

The Tait Lumber Co., Langley, B.C., have received an order for a large quantity of B. C. maple. This maple is to be used in the manufacture of furniture. B. C. maple differs in a marked degree from the eastern product, it being softer and very much shorter in the grain.

The Brompton Lumber Mfg. Co., Bromptonville, P.Q., have been incorporated to carry on lumber operations and to manufacture and deal in lumber and wood products of all kinds. Capital \$49,600. Antoine Fournier, mill manager, of Bromptonville, is one of the incorporators.

The box factory of the Canadian Puget Sound Lumber

"WORTH READING"

THE INTERNATIONAL CREED

We are International Time Recorders—Servants of all peoples.

Our Ancestry dates back over Thirty Years.

We are Well Bred and Well Built for the tasks we perform.

We are the First of Our Race and have always been First in the Race of our Kind.

Our Policy is Progress—Our Creed is Punctuality—Our Mission is to promote the interests of every business and of every man and woman in business.

Our Ceaseless Service is Equalizing the Energies and Earnings of millions of workers in all lines of endeavor—Everywhere.

Our unbiased vigilance Protects the Worker and Corrects the Shirker—It transforms Idleness into Activity—it fills the Time Schedules of Commerce with Cheerful, Willing Co-operation—It enhances the value of Time and Decreases the Production Costs by Increasing Production.

Our Duties are Righteous—Our Authority is Recognized.

In the true and unvarying language of sun, we attest the Beginning and End of Effort and Achievement.

To ignore us is NEGLIGENCE—To doubt us is HERESY—To fear us is FOLLY—To trust us is WISDOM—to EMPLOY US IS SECURITY.

HAVE YOU ENOUGH?

Sometimes one or even two machines are not enough to adequately handle large numbers of employees at opening and closing time. An extra recorder or two will eliminate this otherwise unavoidable congestion at these hours and **increase production.**

Has your plant outgrown its present time recording equipment? Go out and watch your workmen as they leave the factory. You'll find your answer there.

International Business Machines Co. Ltd.

TORONTO

Montreal Ottawa Halifax Hamilton Winnipeg Vancouver

Co., Victoria, B.C., will resume operations as soon as the sawmill proper is thoroughly organized. At present the sash and door factory is being dismantled. A large part of the equipment has been purchased by different mills.

The Edmonton Lumber Exchange, Limited, Edmonton, Alta., has been incorporated to manufacture and deal in lumber, wood products of all kinds, pulp and paper. Capital, \$200,000. J. W. S. Chappelle and W. F. Cavanagh, lumber dealers, of Edmonton, are two of the incorporators.

Legare Automobiles of Thedford Mines, Ltd., Thedford Mines, P.Q., have been incorporated to manufacture and deal in automobiles, motor trucks, carriages and other vehicles. Capital \$100,000. J. H. Fortier and P. W. Fortier, manufacturers, of Quebec City, are two of the incorporators.

The Crompton Car Co., Limited, with headquarters in Toronto, and a capital stock of \$25,000, has been incorporated to manufacture, sell and deal in automobiles, vehicles and automobile parts and accessories. Among the incorporators are M. P. Vandervort and Murry H. Gillam, Toronto.

The E. C. Atkinson Lumber Co., Limited, Gagetown, N.B., were recently granted a provincial charter for the purpose of manufacturing and dealing in lumber, shingles, boxes and other wood products. Capital \$48,000. P. Mahoney, lumberman, Gagetown, N.B., is one of the incorporators.

The Empire Timber, Lumber & Tie Company, Limited, Toronto, Ont., have been incorporated to manufacture and deal in lumber and all wood products and to own and operate saw and planing mills. Capital \$85,000. G. H. Sedgwick and J. W. Pickup, barristers, of Toronto, are two of the incorporators.

The Elliot Woodworking Company, of Toronto, have secured the plant in Belleville formerly occupied by the Burrell Rock Drill Co., and expect to commence operations in a few weeks. The new plant is well equipped with metal-working tools. The Toronto plant will be continued for a time at least.

The planing mill and factory belonging to Ruttan & Ellis, Belleville, Ont., was recently damaged by fire. The blaze started in the boiler room, but spread rapidly to the upper part of the main building and was only extinguished after several hours' strenuous work on the part of the firemen. Loss \$4,000.

The Universal Batteries Limited, which was recently incorporated with a capital of \$50,000, propose erecting a factory at Brampton, Ont. It is the intention to install a wood-working plant to take care of the wooden boxes for their line of storage batteries. Messesvey's Limited, Toronto, are acting as representatives.

The Canadian Linderman Co., Woodstock, Ont., is about to resume operations on a very extensive scale. The plant has been undergoing repairs and it is the intention to manufacture a unit electric and power system, on which full patent rights have been purchased. It is anticipated that a large number of men will be employed.

Gingras Pianos & Gramophones, Limitee, Montreal, P.Q., have been incorporated to manufacture and deal in pianos, gramophones and musical instruments of all kinds. Capital \$48,000. Elias Gingras, piano manufacturer and Rene Gingras, piano tuner, are two of the incorporators. This firm recently registered in Montreal.

Fire broke out recently in the sash and door factory of the Kent Lumber Co. at Granby, Que. The loss was about \$10,000, and the insurance \$6,300. The cause of the blaze is believed to be due to spontaneous combustion. The plant was completely destroyed, but it is understood that Mr. Solomon, the proprietor, intends to rebuild.

The Wagar Furniture Co., Limited, with headquarters at North Bay, Ont., and capital stock of \$40,000, has been incorporated to manufacture all kinds of furniture, wood, tin and metal wares and to conduct a general furniture business. Among the incorporators are Walter S. Wagar, Harvey A. Heavener, John Blanchet, all of North Bay.

The mill and plant of the Halton Saw Mill Co., managed by J. E. Carson, of Hamilton, and located near Georgetown, was burned recently. The mill had been sawing lumber for the past two years for H. G. Cockburn & Son, of Guelph, in Nassagaweya and Esquimaux townships, and had recently been removed to a 75 acre piece of timber near Georgetown.

A company to be known as The Dominion Mattress Co., is being formed to manufacture mattresses, etc., in Petrolia,

Ont. Suitable premises have been secured in the Matheson block and operations will commence in the near future. A number of skilled workmen are being brought in and it is expected that the business will expand into a large enterprise.

Fire broke out in the dry kiln of the large planing mill of Philip Ament, Brussels, Ont. The fact that the kiln was completely filled with heading made the work of fighting the flames more difficult. Assistance was sought from outside towns and the fire was kept confined entirely to the dry kiln. The loss, which amounts to \$3,500, is covered by insurance.

The plant on Dufferin St. formerly occupied by the Canadian Aeroplanes Ltd., has been purchased by the Columbia Graphophone Co., for \$600,000. This company will install machinery and equipment to assemble and manufacture their line of Columbia Grafonolas. With one exception this is the largest plant under one roof in Toronto, the exception being the Massey-Harris Company's plant on King St.

The Belt Grip Pulley Co. of Canada, Limited, with a capital stock of \$200,000, and head office in Toronto, is a newly chartered concern to manufacture, buy, sell and deal in all kinds of pulleys, castors, trucks and carriage wheels and to operate factories and warehouses in connection with the same. Among the incorporators are Hugh J. Harkins, John J. Coffey and Thos. R. McNair, all of Toronto.

\$200,000 is the amount set aside for decorating and furnishing the new parliament buildings at Ottawa, according to an announcement recently made by Thomas Kessie, the furniture commissioner. Speculation has been rife as to the amount that would be required and figures as high as \$1,000,000 have been mentioned. A considerable portion of the furniture saved from the old buildings will be refinished and used again.

The Canadian Phonograph Motor Co., Limited, has been organized, with headquarters in Stratford, Ont., to manufacture phonograph motors and fittings. E. C. Williamson, formerly with the Phono Motor Manufacturing Co., of Brooklyn, will be in charge. The provisional directors are: William Preston, chairman; E. C. Wilkinson, Brooklyn, N.Y.; D. M. Wright, J. R. McDonald and J. Stevenson, all of Stratford. Capital \$50,000 preferred, \$50,000 common stock.

The St. Thomas Cabinets, Limited, St. Thomas, Ont., have been incorporated to manufacture and deal in phonographs, furniture and other wood products. Capital, \$100,000. B. F. Honsinger and J. Woodhouse, of St. Thomas, are among the incorporators. Suitable premises have been secured in the Thomas Bros. factory, and the work of fitting up the new plant is under way. This firm expects to operate about the first of the year. About 150 hands will be employed.

The chair factory of the Canada Furniture Manufacturers, Limited, Wiarton, Ont., was totally destroyed by fire. The outbreak was first noticed in the elevator shaft and did not appear to be serious. It soon spread to other parts of the building, and when it reached the finishing room, with its quantities of varnish and oils, it was seen that the factory could not be saved. A separate building containing office and storeroom did not escape. The damage amounts to approximately \$75,000.

Speaking at a meeting of the Quebec Manufacturers and Merchants' Association held in Quebec, the Hon. D. Pelletier urged the development of trade between the Province of Quebec and Europe. As a result of his eight years' experience in England, he believed there were splendid openings for this trade and he mentioned in particular that there was a great demand for lumber, toys and articles of various descriptions in wood. It was essential, however, that an office be opened in London, with a special representative.

The Canada Creosoting Co., Limited, with a capital stock of \$100,000, and chief place of business in Toronto, has been granted a federal charter to manufacture, sell and deal in all kinds of timber, lumber, wood and wood products; wood preservatives, oils and chemical materials and compounds, and also all appliances and machinery connected with or incidental to the operation of the company. Among the provisional incorporators are Wm. A. J. Case, solicitor, and Jas. B. Taylor, and Geo. E. Atwood, accountants, and Clifford G. Lynch, secretary, all of Toronto.

The town of Wiarton, Ont., is experiencing an industrial revival. Messrs. G. Kastner, J. E. Murphy and others made a proposition to the Wiarton council with a view to purchasing the flooring factory and operating it at full capacity.

TO DESERVE PATRONAGE *and not merely to get it* **IS WHY**



General Offices
GREENWOOD, MISSISSIPPI,
U.S.A.

backs up every sale with 100% service and value.
Our facilities for the production and distribution
of High Grade Lumber are unsurpassed and we
are therefore prepared to make YOUR SOURCE
OF SUPPLY one of satisfaction.

Manufacturers Exclusively

GREENWOOD, MISS.

BAND MILLS:

MOORHEAD, MISS.

KRAETZER-CURED GUM IS BRIGHT, STRAIGHT AND FLAT.

city as quickly as arrangements can be completed. The casket factory, which has long been vacant, may soon be utilized for the manufacture of furniture. The site of the Johnson, Hunter, Crawford mill has been purchased by Capt. R. L. Graham, who recently returned from overseas. Capt. Graham contemplates erecting a mill of large capacity in the spring and there is a strong possibility that a wood-working plant will be equipped in connection with the saw-mill.

Personals

Robert Buskard, carriage manufacturer, of Hamilton, Ont., recently passed away in that city.

James Innes, of the Sutherland-Innes Company, Chatham, Ont., left recently on a business trip to England.

L. C. Fisher, Montreal, one of the Eastern representatives of the British Timber Buyer, has returned to England. Mr. Fisher was called home much earlier than was expected.

R. McDonagh, of the firm of Hart & McDonagh, wholesale lumber dealers, Toronto, has been confined to his home for some time owing to an attack of inflammatory rheumatism.

Frank A. Kent, of the Seaman Kent Co., leaves shortly on a business trip to England. Mr. Kent reports that the plants of the company are very busy and at the present time they are shipping large quantities of maple flooring overseas.

John J. Miller, who for several years past has been inspector for the National Hardwood Lumber Association, with headquarters in Toronto, has joined the staff of the C. G. Anderson Lumber Co., Toronto, and will manage their hardwood department.

F. C. Wade, agent-general of British Columbia, is in England at the present time, conferring with government housing authorities on the question of supplying ready-made wooden houses from British Columbia to relieve the housing situation in England.

George E. Lindsay, President of the Lindsay Factories Ltd., Toronto, who recently disposed of their business, has

been appointed manager for the J. C. Scott Co., Ltd., Toronto. The J. C. Scott Co. conduct a large sash, door and planing mill on River St.

J. J. Coughlan, of the Coughlan Ship Yards, Vancouver, B.C., was in Ottawa recently. While there he ventured the opinion that it is almost certain that no further contracts need be expected from the Dominion Government for the construction of ships on the Pacific Coast.

H. L. Hebard, who has been in the employ of the National Hardwood Lumber Association, in the New England district, for many years, and latterly assisting J. J. Miller in Toronto, has been appointed as successor to Mr. Miller, who recently resigned. Mr. Hebard has entered on his new duties.

Major Cowper-Young, who was formerly connected with the Dominion Spruce Board in aeroplane construction, will establish a shingle and planing mill at Prince Rupert, B.C. Major Young has let the contract for the dry kilns and refuse burners, and says he hopes to show the world that on Queen Charlotte Islands they have better pine than anywhere else where pine is grown and cut.

Major Brechin, B. C. Lumber Commissioner for Ontario, recently returned from a trip to the Coast. He was accompanied by his wife and family, and has taken up his residence in Toronto. William Robertson, of Victoria, B. C., who has been assisting Major Brechin for several weeks, left for the west to resume his duties in connection with the trade expansion work in the Forestry Branch of the Department of Lands.

Mrs. William Rutherford, wife of the founder of the firm of William Rutherford & Son Company, Ltd., Montreal, wholesale and retail lumber merchants, sash and door manufacturers, died on September 23, in Montreal, aged 83. The late William Rutherford predeceased her by sixteen years. She is survived by two daughters and five sons, three of the sons being connected with the firm—Mr. William Rutherford, president; Mr. Andrew Rutherford, vice-president; and Mr. Stewart F. Rutherford, secretary-treasurer. The last named is also managing director of the Dominion Box & Package Co., Ltd.

British Industries Fair, 1920, Open to Canadian Manufacturers

The British Industries Fair, 1920, will be held at London, Birmingham and Glasgow. The arrangements so far make it probable that there will be sufficient space for the manufacturers of Dominion firms to be included. The fair is confined to British manufacturing firms, and the definition of a British firm, in this instance, is a firm whose principal works and head offices are situated within the British Empire and which is not controlled by foreign interests. Canadian manufacturers, therefore, coming within that definition, will be eligible as exhibitors.

The three fairs though held in different cities are in reality one fair. They are held concurrently, each representative a specified group of industries, and no one industry being permitted to exhibit at two fairs.

In view of the fact that admission to the fair is confined to trade buyers only, the general public not being admitted, it is satisfactory to be able to record that about 15,700 different visitors entered the fair during the eleven days it was open this year, and between them placed orders amounting to close on £2,000,000.

These fairs are not exhibitions. They are trade fairs to which admittance is restricted to bona-fide trade buyers seriously interested in the participating trades, and admission is by invitation only.

Copies of the regulations and full particulars with regard to the coming fair, as well as catalogues of the fair just held, may be seen at the offices of the British Government Trade Commissioners in Canada. Applications for space from eligible manufacturing firms in Canada can be received only through the British Gov-

ernment Trade Commissioners in Canada, as follows: Montreal, 367 Beaver Hall, G. T. Milne, O.B.E.; Toronto, 260 Confederation Life Bldg., F. W. Field; Winnipeg, 610 Electric Railway Chambers, L. B. Beale.

Forest Products Laboratory Makes Exhibit

An interesting and educational exhibit was made by the Forests Products Laboratory at the Fifth National Exhibition of Chemical Industries recently held in Chicago. The exhibit was devoted largely to glues and gluing methods. Demonstrations showing the proper methods of mixing caseing glues were given and the glue mixed was used for preparing test specimens which were soaked, boiled, etc., and then tested.

The samples of plywood included specimens ranging in thickness from 3/120 in. to 1 in. A patented plywood, made with a corrugated core and woven faces was shown. The great possibilities in the commercial application of laminated or glued-up products was not overlooked and various samples of built-up stock was exhibited.

A specially prepared sample of plywood illustrating the method of applying aluminum leaf coating to wood surfaces, and the appearance of the coating during the various stages of application, was on view. This coating is many times as resistant to the passage of moisture as even the best spar varnishes.

The scope of this exhibit tends to show in some small degree the practical value of the work and experiments being carried on by the Madison Laboratory.

For Economy and Utility

SERVICE to the buyer has never been a meaningless phrase with us. Rather it truly expresses the policy responsible for the consistent growth of this company in its thirty-three years of existence—the policy to learn as we grow and let the buyer share in the benefits coming from what we learn. That is why we now recommend to careful buyers in kitchen cabinet, furniture and similar fields that they—

Use $\frac{4}{4}$
inch

F. A. S. Cottonwood

6 inches to
12 inches **Wide**

Our cottonwood is strictly of the yellow variety and is an exceedingly desirable and useful wood. This lumber is dry and is flat and straight—ideally suited to many uses requiring such qualities in a smooth, easy-working wood. At the same time the trend of the hardwood market makes possible a considerable saving right now through the use of cottonwood.

ANDERSON-TULLY CO.

MEMPHIS



TENNESSEE

We cut on Five Mills 70,000,000

Feet a Year of Southern Hardwoods

The Lumber Market

Domestic Woods

The market situation respecting Canadian woods is decidedly strong. All branches of the wood-using industry are at present in a very prosperous state, and this condition is faithfully reflected in the lumber business. Practically all grades and kinds of lumber seem to be moving freely, and in many cases stocks are decidedly low. The hardwood situation is particularly strong. A number of American buyers, representing in particular the automobile industry, have been endeavoring to secure larger quantities of birch and elm in 8/4 and thicker, and numerous cars of this stock have been moving southward. Prices on this particular stock have been very firm; in fact the tendency has been slightly upward.

The stocks of thinner hardwoods are very low and scarce at the present time. In this connection it might be mentioned that some of the large lumber dealers seem to think that the Canadian wood users, particularly the furniture manufacturers, have not really grasped the seriousness of the present situation. They say that the American furniture men have sized up the lumber market and have protected themselves against any possible shortage that may occur this fall and winter, whereas the Canadian furniture men have in many instances failed to do this. Stocks of 4/4, 5/4, 6/4 lumber in the different hardwoods are pretty well exhausted. Very little is being cut now, and it will be well on into next summer before the winter cut will be fit to ship. In that case what will take care of the demand from now until spring? Will those who have not anticipated their requirements be forced to curtail production? Manufacturers who require quantities of these hardwoods may well give this matter their thoughtful consideration.

The softwood market is in better shape. While dry stocks are moving freely and orders keep coming in the available supply seems adequate. However there is not any large surplus on hand. The building trade is brisk, creating a market for building material of all kinds. While strikes have hampered construction work in some centres, adversely affecting the lumber market, general building conditions are good.

Prices on all stocks have been firm with slight advances on certain items, notably hemlock, in evidence. The usual report is that a good volume of business

is being transacted, and practically all lumber dealers anticipate a good demand for the next few months.

Imported Woods

The situation existing in the different hardwood centres has undergone very little change during the last month. The demand is still strong, though the mad scramble for stock that has been a feature of the market, is absent. Prices are very firm and all indications point to present quotation continuing for an indefinite period. It is true that certain items that had been forced up out of all reason have receded in price. These instances are not numerous and must not be taken as an indication that lower prices will prevail. The cost of operations both at the mill and in the woods have not decreased any, in fact the tendency is slightly upward and the labor situation is very uncertain with a slight shortage of operators.

Not before these factors adjust themselves and production reaches something like normal, to-day it is 65 per cent. of normal, can any marked change in prices be looked for, and even when that time comes it is very problematical whether prices will be lower.

In the Memphis district there is a marked car shortage. This effects the supply of logs as well as the shipments of lumber. It is just possible that a number of mills will have to curtail operations, if not close down entirely, owing to low water preventing the logs reaching the mills. The car shortage is more or less acute in practically all the southern hardwood centres.

Quartered oak is in strong demand in the Louisville district, with walnut moving freely. The movement in gum is very strong. Logs are coming in freely. The shortage of cars, so marked in many districts, has not been felt to any marked degree. Prices are being maintained at high levels and in some few instances have advanced lightly.

The Evansville hardwood market has been very active. The different oaks are in strong demand and prices have not shown any signs of receding. Owing to the extreme scarcity of stock many manufacturers look for present prices to hold for a considerable period. General trade conditions are good, orders are coming in freely and there is a large amount of business in sight.

To sum up, stocks are still low and broken, the demand for practically all lines is good; prices are firm, with every indication of continuing so; orders are plentiful with a good business in sight, and production is but 65 per cent. of normal.

Felger Lumber and Timber Company

MANUFACTURERS AND WHOLESALEERS

NORTHERN AND SOUTHERN HARDWOODS

Main Office:
GRAND RAPIDS
733 Mich. Trust Bldg.

Southern Office:
MEMPHIS, TENN.

Mississippi Delta Gum

Quartered and Plain
Red and Sap

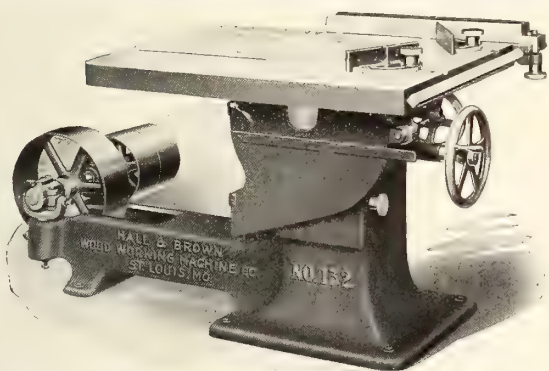
Oak

Quartered and Plain
Red and White



The
KORN-CONKLING Co.
CINCINNATI, OHIO

Mills; Percy, Mississippi



For Economical Sawing Use the No. 132

Ripping, cross-cutting, mitering, gaining, grooving, dadoing, etc., can be handled quickly and easily at low cost on the No. 132 Combination Saw—a new type saw for general use—a time and trouble saver, cost-cutter and profit-maker.

Rips up to 16 inches wide and with a 14-inch saw will cut up to 3½ inches thick. Has tilting iron table provided with cross-cutting and ripping gauge—worm-wheel and segment arranges for tilt. Carries saws up to 16 inches and has mandrel extended for dado heads. No. 132 is also built with boring and mortising attachment and can be arranged for direct motor connection. Learn all about the No. 132 and its possibilities as a profit-maker in your plant—we'll send full information on request. Write for it today

Hall & Brown Wood Working Machine Co.
Home Office and Factory, 1913 to 1933 N. Broadway
SAINT LOUIS, U.S.A.

Do You Use Hardwoods as Follows:-

40M ft. 1" No. 3 Com. and Btr. Hard Maple.
38M ft. 2" No. 2 " " " "
40M ft. 3" No. 2 " " " "
2 cars 1" No. 3 " " " Soft "
68M ft. 1" No. 3 " " " Beech
25M ft. 2" No. 2 " " " "
11M ft. 1" No. 3 " " " Soft Elm
2M ft. 6/4" No. 2 Com. and Btr. Soft Elm.
8M ft. 3" & 3½" Com. and Btr. Soft Elm.
9M ft. 1", 2" and 3" No. 3 Com. and Btr. Oak,
largely 1" and 2".
500 ft. 1" No. 3 Com. and Btr. White Ash.
4M ft. 1" No. 3 Com. and Btr. Hickory.

If so

Let's quote

Canadian General Lumber Company, Limited

712 Bank of Hamilton Bldg.

TORONTO

MONTREAL OFFICE: 203 McGill Bldg.

Selling

Graves, Bigwood & Co.'s
Lumber, Lath and Box Shooks

Information on Working Air-Dried Stock

Editor "Canadian Woodworker."

I have a quantity of red and white oak which has been piled in the open for from three to six years. I took this stock inside during a hot dry spell and now want to make it up into furniture. If worked up without further drying would there be any danger of the glue joints opening up? Would piling lumber over a steam boiler for a few weeks do any good? Any information you can give will be greatly appreciated.

Yours truly,
Jas. Giles.

Without testing the stock it is not safe to venture an opinion. From three to six years' drying, if well piled, should put the stock in pretty fair shape, but as a rule it is advisable to dry lumber artificially before attempting to work it up. If your boiler is free from all steam and dampness you could probably dry some stock there. It would not be a very rapid process and it would be necessary to take pains to see that the lumber is properly piled. A simple way to test lumber is to cut a small piece from the centre of a board and, after knocking off all loose slivers, weigh it carefully in a pair of apothecaries scales. Next, place the piece in the oven or other hot place and bake it, without charring, until thoroughly dry. Weigh again, and if the loss of weight, due to the evaporation of moisture is $4\frac{1}{2}$ per cent. or less, the stock is in good shape to be worked up.

Do You Want to Make Carved Phonograph Legs?

A middle west manufacturer is desirous of being put in touch with some concern that is in a position to make a quantity of carved phonograph legs in

birch and oak. A considerable quantity of these legs are required. If any of our readers would care to make these legs the name of the phonograph manufacturer may be secured from the publishers of this journal.

Shaded Approach to Saw Factory

It is strikingly fitting that the largest concern in the world manufacturing saws should have in mind, as many as twenty-three years ago, one of the most popular and important topic of the present day—Reforestation.

The accompanying picture shows a very fine avenue of hardy Norway maples on both sides of the long approach to the fifty acre factory of Henry Disston & Sons, Inc., Philadelphia.

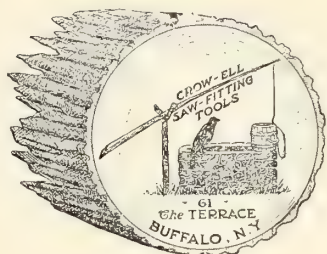
One of Disston's long-time employees, when viewing this photograph, remarked: "Well do I remember the old walk, and four times a day for many years I trod the path with thousands of fellow workers. It was of cinders, trodden down, and in the summer this long, wide, deep bed of cinders seemed to absorb the hot rays of the sun and throw them out with redoubled vigor as one walked along. The improvement is a lasting and beautiful memorial to the thoughtfulness of Samuel Disston, whom all the boys called "Uncle," for reaching the shade of the widespreading branches of the maple trees one enjoys the cool, delightful stroll along the smooth cement pavement to the entrance of the works."

It is peculiarly interesting and seemingly contrary that Disston, whose saws for years have been used in denuding many thousands upon thousands of acres of timber should be planting, growing and preserving our beautiful shade trees.

Manufacturing plants in outlying districts and municipalities may well take note of this as an example which will bear emulating.



Rows of Norway
Maples planted
twenty-three years
ago



The Sign That Insures Saw Satisfaction

The "Crowell" trade mark on your saw-fitting tools is sufficient assurance of their reliability and quality. They serve their purpose in a perfect manner and a close examination will prove them far superior in construction and workmanship. Write us for a copy of our illustrated booklet.

D. J. Crowell

61 TERRACE

Buffalo - N. Y. U.S.A.

"Furniture in England"

This book is an encyclopaedia of artistic suggestion—an education in itself.

Upwards of 400 exquisite half-tone and color plates on pages 14 ins. x 10 ins.

Price \$12.00—Delivered to any address in Canada. Copies may be obtained from

The Woodworker Publishing Co.
Limited

Toronto Ontario

A Few New and Refitted Woodworking Machines

from our large stock of up-to-date machinery. Write us for prices and information on any machines not listed that you may require.

CHAIN MORTISERS

- Stock No. 44911—Used M-256 Cowan Chain Mortiser with 5/16 in. bar chain and sprocket. No sharpener.
Stock No. 44566—Practically new M-255 Cowan Chain Mortiser with 5/16 in. chain, bar and sprocket with 1 3/8 in. sprocket extra.
Stock No. 44568—Practically new M-255 Cowan Chain Mortiser with 3/8 in. chain bar and sprocket and 5/16 in. chain bar and sprocket.
Stock No. 44567—Practically new M-255 Cowan Chain Mortiser with 3/8 in. chain bar and sprocket and 5/16 in. chain bar and sprocket.

SINGLE SURFACE PLANERS

- Stock No. 32959—New 24 x 7 Eclipse Single Surface Planer, top and bottom rolls driven. Feed rolls are 3 1/2 in. diameter, 13 1/2 in. apart.
Stock No. 31317—New Preston 26 x 10 Single Surface Planer with divided rolls. Feed rolls are 16 in. apart.
Stock No. 31318—As above.
Stock No. 44620—Used 24 x 7 Eclipse Planer, Matcher and Moulder, will match 12 in. wide.
Stock No.—Used 24 x 7 Eclipse Single Surface Planer.
Stock No. 33111—New 24 x 7 Clark & Demill Single Surface Planer, cylinder driven at both ends. Feed rolls 4 1/2 in. dia., 19 in. apart, all driven.
Stock No. 29278—Used 30 x 8 McGregor-

Gourlay Single Surface Planer, with divided rolls and chip breaker. Cylinder is driven at both ends. Feed rolls 6 in. dia., 17 in. apart. This is a good heavy type cabinet planer.

Stock No. 31758—Used 24 x 6 Whitney Single Surface Planer, cylinder driven at both ends. Feed rolls 4 3/8 in. dia., 12 1/2 in. apart, all driven.

Stock No. 44913—Used 28 x 6 Whitney type Single Surface Planer, cylinder driven at both ends. Rolls 4 3/4 in. dia., 13 in. apart, all driven.

Stock No. 44846—Second-hand McGregor-Gourlay 24 x 7 Pony Planer, top rolls only are driven. Rolls are 3 in. dia., 13 in. apart. Machine is now manufactured by the C. M. C. Bottom rolls 5 in. dia., and machine will feed 25 ft. per minute. Tight and loose pulleys are 8 1/2 in. x 4 1/2 in., run 1000 r.p.m.

CUT OFF SAWS

- Stock No. 42306—Used Greenlee Automatic Cut-Off Saw, travelling saw carriage operated by foot lever and friction, 36 in. dia. saw, cuts 13 1/2 in. above table.
Stock No. 44798—Used McGregor-Gourlay Dimension Rip and Cross Cut Saw Table. Will carry 18 in. saws, ripping 13 in. wide, with rip and cross cut fences, raising and lowering arbor, tilting table 48 in. x 36 in.
Stock No. 42782—New Beach Iron Frame Rip Saw with wooden table, raising and lowering mandrel.

Stock No. 42795-41—New No. 125 Preston Variety Tilting Saw Table.

Stock No. 44733—New No. 127 Preston Variety Tilting Saw Table.

Stock No. 42826—New No. 4 Dodds Variety Tilting Saw Table.

Stock No. 42784—New No. 6 Dodds Variety Tilting Saw Table.

Stock No. 44685—American Lightning Cut-off Saw. Machine is self contained. Size of table 26 x 31 1/2 in.

SASH AND DOOR RELISHERS

- Stock No. 44529—M-225 Cowan Sash & Door Relisher and Mortiser.
Stock No. 40964—Jackson Cochrane Door Relisher.
Stock No. 40968—M-234 Cowan Sash Relisher and Mortiser.

BAND SAWS

- Stock No. 44627—Used Genuine Westside 36 in. Band Saw, with tilting table, good up-to-date machine; first class condition.
Stock No. 45590—New 36 in. Preston Band Saw with wire guard on top wheel, iron enclosing doors on bottom wheel.
Stock No. 44653—Used 36 in. Preston Band Saw with wire guard on top wheel and iron enclosing doors on bottom wheel arranged for motor drive.
Stock No. 44913—Used 36 in. Defiance Band Saw with re-sawing attachment, will carry 1 1/2 in. saw.

The A. R. Williams Machinery Co., Limited
TORONTO, CANADA

FOR SALE

Single Surfacers, 28 inch, Whitney pattern, in good condition. Will sell cheap. Box 67, Canadian Woodworker.

Polished Broom Handles Wanted

A large broom manufacturer is in the market for quantities of polished Broom Handles. Address Box 66, care of Canadian Woodworker.

FOR SALE

One Baxter D. Whitney Surface Planer, 42 in., \$300.00.

J. H. CONNOR & SON, LIMITED,
9-11 Ottawa, Ont.

FOR SALE

One Royal Invincible 37" Three Drum Sander in good condition, valued at \$500.00. A snap.

BELL PIANO CO.,
Guelph, Ont.

**FOR SALE
Saw Mill Machinery**

Complete saw mill machinery; equipped with rotary, steam feed carriage, Gang Saw, Resaw, Edger, Butter, Lath Machine. Three Boilers and twin engine 300 H.P.; also saw gummers, filers and one shingle machine, with bolter and barker. For particulars apply:

CHICOUTIMI PULP CO.,
9-12 Chandler, Que.

FOR SALE

8 x 26 Morgan Nailer, open back.
12 x 30 Morgan Nailer, open back.
Box Board Matcher.
Circular Re-Saw.
24" Single Surface Planer.
Double Cope Tenoning Machine.
10" 4-side Moulder.
12" 4-side Moulder.

MAYDWELL MFG. CO.,
65 Sautter Street, Toronto.

**Second Hand
Machinery**

The following is a list of some of the second-hand machinery I have for sale. Some of the machines have been used very little, and are practically as good as new. If you wish to buy any machinery, write me for prices. I can save you money.

Pugmill, Canton Special Auger Brick Machine, Automatic Side Cutter, Re Press, Large Exhaust Fan, Large Induction Fan, Planers, Moulders, Veneer Presses, Door Clamp, Shapers, Tenoner, Ripsaws, Bandsaws, Engines, etc.

Receiver, Riverside Lumber Co.,
Royal Bank Chambers,
Calgary, Alberta.

FOR SALE

Generator, 110 volts, K.W.
150 horse power Engine, Goldie & McCulloch.

Matcher, McGregor & Gourlay, 15 in. head.

12 in. four sides Moulder, Goldie & McCulloch make.

All these machines are in good condition and the prices are right. Apply:

Gold Medal Furniture Mfg. Co., Ltd.,
9-10 Toronto.

Wanted—Mill Superintendent

To take charge of general Sash and Door, Planing and Hardwood Flooring Mill. Located in good town, and with excellent prospects to right man. Apply, stating age, experience and approximate salary required. Applications treated confidentially. Box 68, Canadian Woodworker.

Mast Shaping Machine

A machine has been built which will shape masts up to 100 feet in length and three feet in diameter. The timber is set up in the machine and revolved at a speed of fifty revolutions a minute, and it is shaped by a cutter head, which is electrically driven at the rate of 700 revolutions a minute.

This cutter head is mounted on a carriage, which is moved along the timber against a rail set to give the proper profile to the mast. Heretofore this work has been done by hand and required skilled workmen. At best it has been a slow and laborious task.

Wood-Stave Pipe Line Put to Unusual Test

Several times during the same season heavy floods lifted a large wooden pipe line, supplying a hydro-electric power station, clear of its supports and battered it against its ballast bed. Yet examination at the end of the season showed that the pipe was perfectly sound and had retained its circular shape throughout. This is noteworthy, as the pipe was almost four feet in bore, was strengthened only by hoops, and was anchored only at the intake. It seems to indicate, too, that wood-stave pipe is a great deal stronger than is generally supposed, and is well fitted for use in hydro-electric plants.

Industrial Value of Maple

Maple is the most important hardwood used by Ontario's wood-using industries, over three-quarters of a billion feet board measure being used every year. Accidental forms with the grain curled and contorted, known as curly maple and bird's-eye maple, are common, and are highly prized for decorative work. Maple does not grow in any quantity north of the 49th parallel of latitude in Ontario. The material is used in twenty-eight industries. The greatest quantities are used for hardwood flooring, furniture, and wood distillation, as stated in a bulletin issued by the Forestry Branch, Department of the Interior.

**PETRIE'S
LIST**

of NEW and USED
WOOD TOOLS
FOR IMMEDIATE DELIVERY

Wood Lathes

20" Sidney, "Famous."
16" Sidney, "Famous."

Wood Planers

26" Double surfacer, divided rolls.
24" Champion planers and matchers, moulding attachment (2).
24" Galt, planer and matcher.
24" Hermance, double surfacer.
24" MacGregor-Gourlay.
24" Sidney, "Famous," single surfacer.
24" Crescent, single surfacer.
12" buzz, with slotted head (2).
12" Petrie buzz planers, with safety heads (6).

Band Saws

60" Fay & Egan, band re-saw.
36" Famous, pedestal.
32" Famous, pedestal.
30" Cowan, bracket.
20" Famous, pedestal.

Saw Tables

No. 16 Famous, variety.
No. 6 Famous, variety.
No. 4 Famous, combination.
Galt, iron frame, cut off.
MacGregor Gourlay railway cut-off.
No. 1 Greenlee automatic cross-cut.
7" Williams, swing saw.
1" Famous, swing saw.

Mortisers

Cowan, upright, power.
Galt upright, compound table.
No. 1 Smart, foot power.
No. 2 Osborne-Baker, foot power.

Moulders

13" Clark-Demill four-side.
12" Cowan four side.
12" Woods four side, inside.
8" Dundas four-side.
6" Dundas sash stickler.

Clothespin Machinery

Humphrey automatic lathes (5)
Humphrey double slotters (3)

Miscellaneous

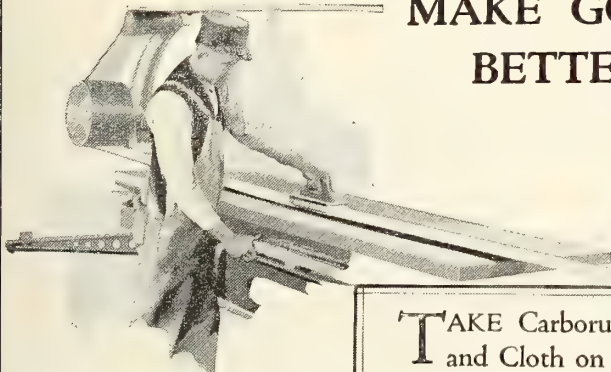
Fay, horizontal, boring machine.
No. 7 Sidney, post boring machine.
24" Fay, double drum sander.
No. 1 Ballantine power feed dowel machine.
Fay & Egan 12 spindle dovetailer.
MacGregor Gourlay 12 spindle dovetailer.
No. M 120 Cowan, panel raiser.
30" Whitney, wood scraper.
20" American, wood scraper.
6" British-American, hand floor scraper.
Dundas, wood frame tenon machine.
Fay, iron frame, double head, tenon machine.
Cowan, veneer press, screw.
No. 2 Reynolds, power screw driver.
Hall's automatic shingle machine.
Waterous lath machine.
26" Dominion lath trimmer.
G. Linderman, automatic, glue jointer.
No. 3 Defiance, rim & felloe rounder.
No. 1 Defiance, axle shaper.
No. 1 Defiance, spoke driver.
Vaughan, gasoline driven portable drag saw.
Champion, friction portable drag saw.

Ask to see our large stock of used supplies—belting, pulleys, machine shop equipment, mill supplies, pipe and fittings, etc. Most of this material is as good as new, and can be bought at greatly reduced prices.

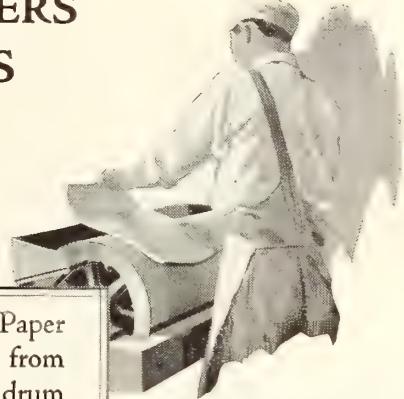
H. W. PETRIE, LTD.
Front St. W., Toronto, Ont.

CARBORUNDUM BRAND GARNET PRODUCTS

MAKE GOOD SANDERS BETTER SANDERS



Carborundum Brand Garnet Belts are accurately made—the joints are strong and flexible



Carborundum Brand Garnet Paper increase the output of the single drum sander.



Note the flexibility of Carborundum Brand Garnet Cloth. The cloth does not crack—the grain stays on.

TAKE Carborundum Brand Garnet Paper and Cloth on any sanding operation from the coarsest work on the disc or the drum sander to the finest hand finishing.

You will find that they cut clean, fast and uniform—that there is flexibility where it's needed—that every inch is evenly coated with the purest, sharpest of North River Garnet Grain.

There isn't a bit of grain, backing or glue that goes into the making but what has absolutely met the high manufacturing standards set by Carborundum ideals of quality.

*Carborundum Brand Garnet Products Make
Good Sanders Better Sanders*

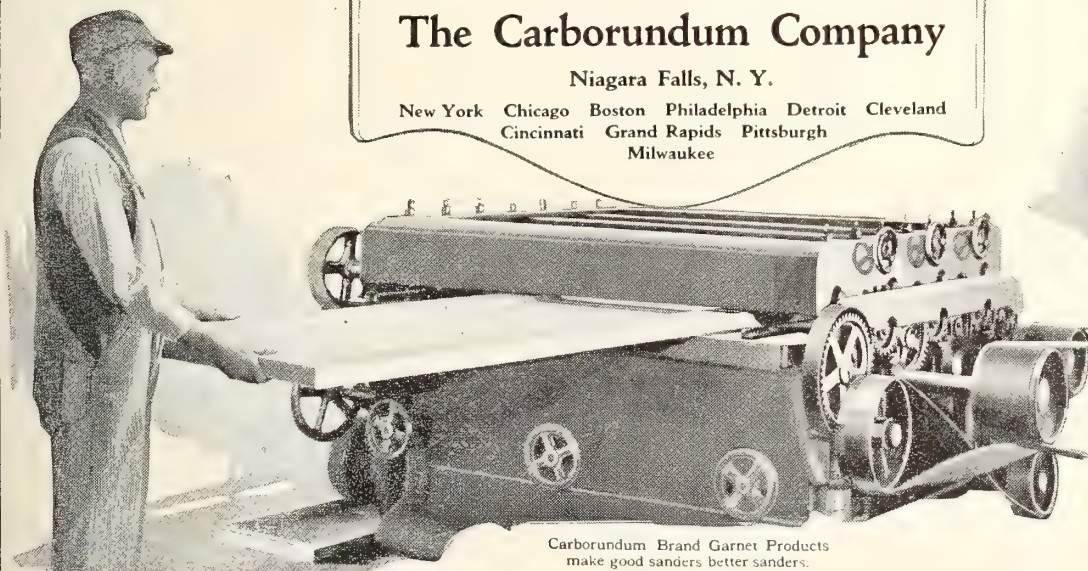


Sanding boxes with a Carborundum Brand Garnet Belt.

The Carborundum Company

Niagara Falls, N. Y.

New York Chicago Boston Philadelphia Detroit Cleveland
Cincinnati Grand Rapids Pittsburgh
Milwaukee



Carborundum Brand Garnet Products make good sanders better sanders.



For fine hand finishing Carborundum Brand Garnet Cabinet Papers.



No. 611 Saw

ON HEAVY WORK



These men are ripping 4" KILN DRIED BIRCH at 50' per minute. It is no special occasion or trick job with them. They do it every day or so, and as often, or as long as is required.

On heavy cutting and strong feeding the No. 611 excels. We have yet to see another machine of this type that is its equal.

These men also joint black walnut right off the saw without further correction.

These two operations bear vivid evidence of the all-round adaptability of the No. 611.

Is the No. 611 not worthy of your investigation?

CANADA MACHINERY CORPORATION, LIMITED, GALT, ONTARIO

Toronto Office and Warerooms:

-

Brock Avenue Subway

Perkins Vegetable Glue

Behind our claim for a Superior Vegetable Glue
is
a well equipped factory operated by men who
know the Trade wants only the best.

Our Manufacturing Process
is the Secret of
Our Perfect Product

This label and Trade Mark
Protect
you and your Trade

PERKINS
183
Trade Mark

They will ask no more
questions when you say you
use "Perkins 183."

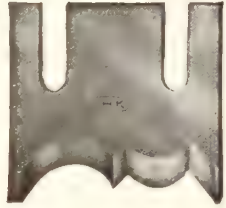
Process and Product Patents covering Perkins
Glue were granted July 2nd and March 19th,
1912, and have been held valid and infringed by
United States Circuit Court of Appeals. Cor-
responding Letters Patent Granted in Canada.

Perkins Glue Company

Factory & General Offices :
Lansdale, Pennsylvania

Sales Offices :
South Bend, Indiana

The Peter Hay Knife Co., Ltd.



Manufacture the Best
PLANER KNIVES
and **CUTTERS**

OF ALL DESCRIPTION

The Peter Hay Knife Co., Limited
GALT, ONTARIO

PRESSES

For Veneer and Veneer Drying

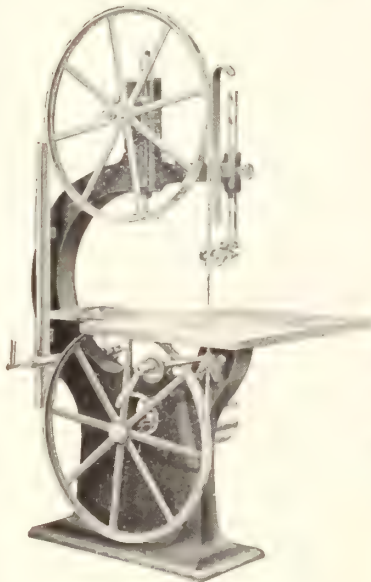
Made in Canada

William R. Perrin

Limited

Toronto

Simplicity Efficiency



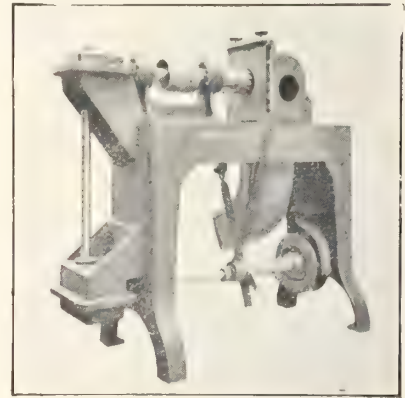
The construction of Silver's Improved Power Band Saws is remarkably simple. Efficiency is the result. No intricate parts to go out of order, no hold up by minor breakdowns, etc. You'll find them perfect in operation and quick and accurate in their work. We will gladly furnish you with further information at your request.

The Silver Mfg. Co.

Box 370

Salem, Ohio, U.S.A.

AUTOMATIC MACHINE FOR CUTTING HOLES



Patents Pending

This machine will cut holes or half holes in long or short boards, smooth and true in size. Will also cut wheels and automatically bore holes in the center at same operation. It works automatically on short blocks, feeding up to the head and pushing them out after they are cut. Has a capacity of 18 wheels or holes per minute. Will make bevel or square edge wheels. When writing give diameter, thickness and kind of wood to be used. Machines are made to suit the work. It has an attachment to cut hand-holds in crate ends, or a Special Machine is made for that purpose. When writing give street number.

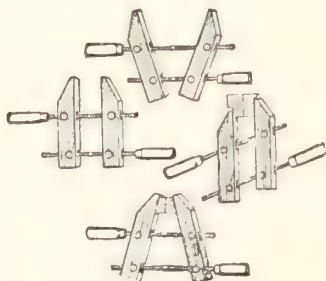
Machine is substantially built of iron and steel, ball bearing equipped and worm gears running in grease.

Full detailed description and price on request.

The Virginia Hole Sawing Co.

S. S. See, Manager

14 Third St., N.E., Roanoke, Va.



"JORGENSEN"
the Efficiency
Clamp

Adjustable Steel Spindle Clamps that hold better and are far superior. Their guarantee against breakage protects you. Write for further particulars.

If you cannot buy them from your Jobber write us direct.

Adjustable Clamp Company

216 N. Jefferson St., Chicago, U.S.A.

Palmer & Parker Co.

103 Medford St., Charlestown District

BOSTON, MASS.

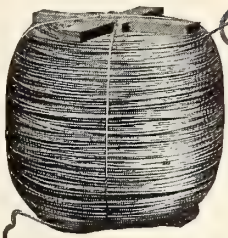
MANUFACTURERS OF

African, Mexican and Cuban

MAHOGANY

veneers and
Built-up Panels

TEAK and other
Foreign Woods



Fibre



Two Short Cuts to Profits

FIBRE CORD AND STAKES OF UNIFORM QUALITY have many features to commend them to the manufacturer of fibre furniture. Our cord and stakes of high grade sulphite stock give wearing qualities that are unsurpassed and add a distinctive appearance to your finished product. Just try them and you will see the difference between our standard quality and others.

UNAFLEX SEAMING CORD is now used by many manufacturers of high grade upholstered furniture. Its uniform size and quality at once appeal to the workmen, and its lasting service will give the customer longer wear and greater satisfaction. Unaflex Seaming Cord is right, both in quality and price. Made in sizes from 3/32" to 16/32" on 50 lb. reels.

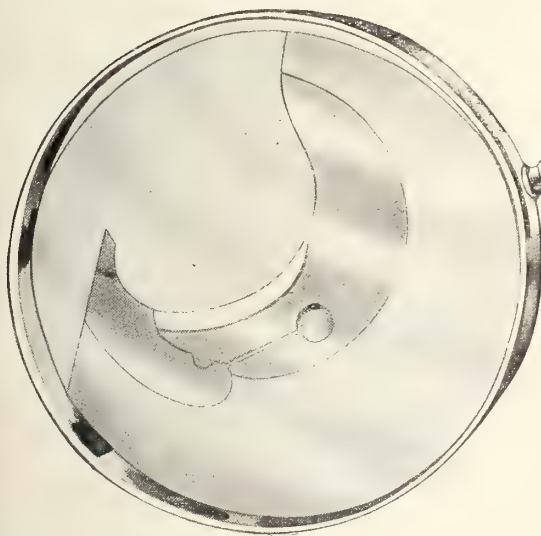
Let Us Send Samples and Prices

GRAND RAPIDS FIBRE CORD COMPANY

1101-1157 Elizabeth Ave.

Grand Rapids, Michigan

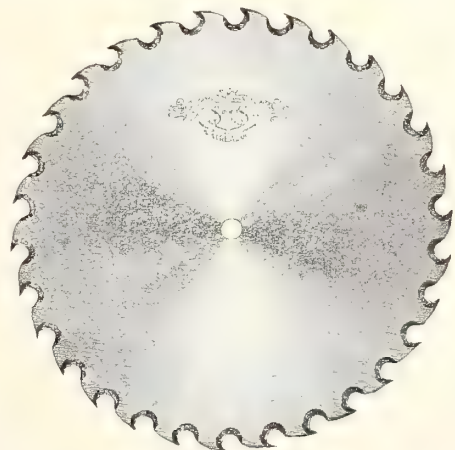
SIMONDS INSERTED TOOTH SAW



The perfect fit of the Points and Shanks in the Plate means no disturbing of the tension of the plate when inserting or removing points.

Milled grooves in Simonds Points and Shanks and milled "Vs" on the plate insure absolutely rigid teeth and perfect alignment.

Simonds gives perfect results on the toughest kind of sawing. Write us about the cutting you have to do.



Simonds Canada Saw Co., Ltd.

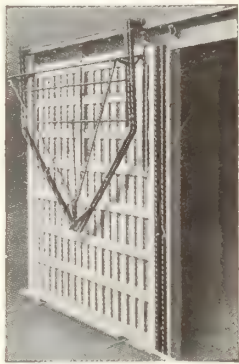
"The Saw Makers"

Vancouver, B. C.

Montreal, Que.

St. John, N. B.

The Door Carrier System



Makes your dry-kiln doors steam-tight and saves time, heat, trouble and money.

Carrier lifts door clear of kiln and carries it down track. Returning, deposits door to rabbeted joint, where it is held steam-tight by its own weight. Applicable to old or new kilns.

Ask for catalogue.

**DRY KILN
DOOR CARRIER CO.**

1117 Cornell Ave.
INDIANAPOLIS, IND.

SAVES 2 HOURS A DAY
SAVES 10 FEET OF LUMBER
That's \$25.00 a MONTH or More than Total Cost of this
ALL STEEL AUTOMATIC SWING SAW GUAGE.
WE SHIP ON TRIAL
3500 IN USE
ACT NOW.

GUARANTEED AND SOLD BY THE
TANNEWITZ WORKS,
GRAND RAPIDS, MICH.



For Better Work and Greater Service "Maple Leaf" Grooving Saws

From our complete line of guaranteed saws we can meet your needs for special shaped tooth grooving saws in round face, bevel face, shear cut, straight face, etc. Write for catalog and further information regarding our other manufactures, including Dado Heads, Mitre Saws, Novelty Saws, Rip and Cross-Cut Circular Saws, Concave Saws, Band Saws, Hand Saws, Cross-Cut Saws, etc.

Shurly-Dietrich Co., Limited, Galt, Canada Branches — Vancouver, B.C., and 306-308 Wellington Street, Ottawa

We have the best facilities for the
Manufacture of

SPRING MATTRESS and CAMP COT FRAMES

also DIMENSION STOCK
in Maple, Beech and Birch

Write for prices

John P. Newman Sons'
WIARTON, ONT.

Wire, Wire Bale Ties and Wire Products

Bale ties, Heading ties, Lath ties, Hardwood Flooring ties, Wire Nails, Flat Steel or Wire Barrel hoops. All sizes of Fine Wire in Bright, Tinned or Galvanized, manufactured to order.

Laidlaw Bale-Tie Co., Ltd.

A. T. Diggins, Toronto, Ont. H. E. O. Bull, Montreal, Que.
Harry F. Moulden & Sons, Winnipeg, Man.
Head Office and Works: **HAMILTON, CANADA**

HIGH LABOR COSTS are giving you as much worry as they are giving us. We can show you how to **reduce** them by driving **seven** screws in the time formerly occupied in driving four.

Read below what one large furniture manufacturer said about our screws to one of his competitors.



See That
Square Hole?



Robertson Patent Socket Head Wood Screws

See That
Square Hole



We are in receipt of your letter of the 17th in reference to the Robertson screw. We were rather backward in trying to make ourselves believe that this screw is as good as the old slot screw, but we have entirely changed and are now using the socket head screw exclusively. It would surprise you how many more screws of this make the workman can drive than of the old style. You will make no mistake in using their screws altogether.

WE MAKE AND SUPPLY FREE WITH FIRST ORDER BITS FOR
USE IN REYNOLDS MACHINE OR ANY OTHER TYPE DRIVER.

P. L. Robertson Mfg. Co., Ltd.
Milton - - - - - Ontario

How Many Screws (Wood or Machine) Do You Drive Per Day?

Getting away from the old style hand system of driving screws means a saving in time, labor and money. That's why the most progressive furniture and woodworking plants, etc., are installing Reynolds Automatic Screw Driving Machines—the machines with the magazine that assures lightning speed and accuracy. Dumping a gross of screws into the magazine at one time means a continuous stream of carefully driven screws, thus eliminating wasted time and speeding up the production of efficient work.

You'll be interested in this machine if increased production and profits are what you desire. Write for further information.



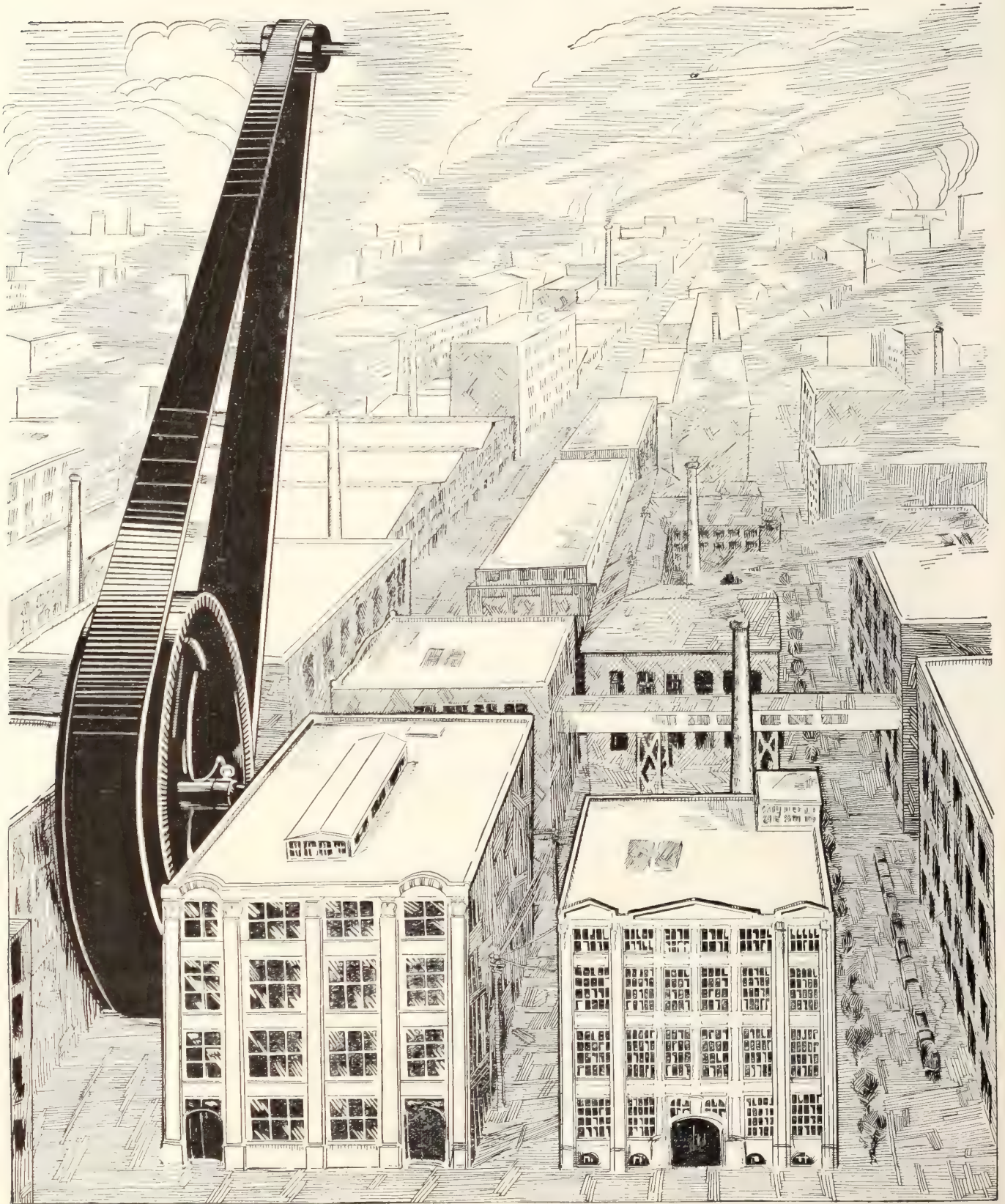
Dimensions of work

Size and kind of screws used

If you can guarantee your machine to do our work, send description and prices.

Name.....

Address.....



OVER 1000 INDUSTRIALS USE



EXTRA POWER BELTING

ON RECORD in our offices alone are the names of over 1000 Canadian industrials who are satisfied users of Goodyear Extra Power Belting.

A vast hive of industry, giving employment to thousands upon thousands of men. Engaged in every form of industrial activity known in the Dominion. Turning out millions of dollars worth of Canadian products every year.

What an overwhelming endorsement of Goodyear Extra Power Belting this is. Belts bought to fill every transmission requirement. Working

under varied conditions. All required to deliver satisfaction.

Think of the great power-saving because Extra Power Belting is flexible. It grips the pulleys and combats slipping. Greater production has almost invariably followed the use of Goodyear Extra Power.

Over a thousand trained Engineers and superintendents cannot be misled. You cannot blind over a thousand purchasing agents. There must be—there is—something vital in the Goodyear Extra Power Belting story. Let us send a man trained by Goodyear in belting problems to talk it over with you. He will tell you about Extra Power as it applies to your plant. Should Extra Power not be suited to your needs, we would rather have your friendship than your order. Phone or write our nearest branch.

The Goodyear Tire & Rubber Goods Co. of Canada, Limited

*Halifax, St. John, Quebec, Montreal, Ottawa, Toronto, Hamilton, London, Winnipeg,
Regina, Calgary, Edmonton, Vancouver*



"Now We Can Stay at Our Benches and Produce"

Put a Wallace Bench Saw and a Wallace Bench Planer

out on the floors among the workmen who have cutting, fitting, trimming, assembling or jointing work to do. You immediately speed up production and cut costs in half, for you cut out 80% of your hand work and save 70% of those expensive, time-consuming trips to the stationary machines.

Write for catalogs—it will pay you.
Thousands of shops are already equipped.

J. D. Wallace & Co.

1414 West Jackson Blvd., CHICAGO, ILL.

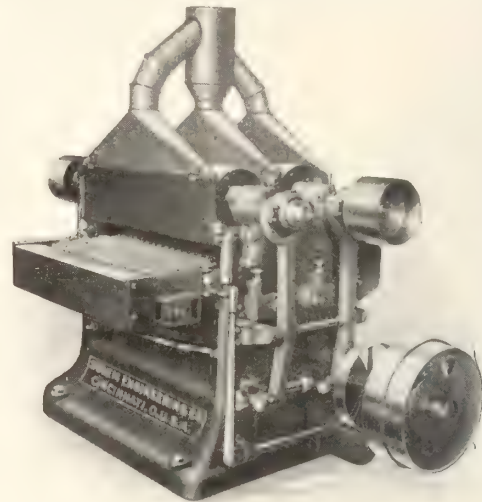
Canadian Representatives:

The Geo. F. Foss Machinery & Supply Company.
The A. R. Williams Machinery Company.

\$1200⁰⁰ to \$1500⁰⁰ Saving on Every Drum Sander

Simplicity of construction allows us to offer a 37" Endless Bed Drum Sander at far below the cost of the old type of machine.

It does more work and saves \$10.00 to \$20.00 in upkeep. Whether you need a sander now or not write for our bulletin and get posted on this economical machine.



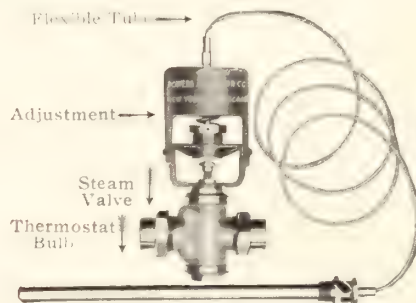
One cost saving part used on this machine can be bought separately and attached to any standard make of drum sander.

Solem Engineering Co. SHEBOYGAN, WIS.. U. S. A.

A Letter from "The Boss"

"The Boss" covers the whole ground so well in his letter that I can't add anything to it.

He certainly makes plain the reasons why YOU need Powers Regulators wherever you have temperature to control.



Powers No. 11 Regulator

This regulator is entirely self-contained, requiring no air or water pressure for operation. Automatic, reliable and accurate. Peculiarly adapted to the control of glue heaters, hot water tanks, etc., etc.

There is a Powers Regulator for practically every place where temperature control is desirable. Tell us your conditions, and we will advise you how to get right results—saving time, labor, material, and fuel, and improving the grade of output.

The Canadian Powers Regulator Co.

Specialists in Automatic Heat Control

115 BAY STREET, TORONTO

OFFICES
NEW YORK
CHICAGO
SEATTLE
BOSTON
DETROIT
KANSAS CITY
WINNIPEG
VANCOUVER
CLEVELAND
CALGARY
MONTREAL
TORONTO
BUFFALO

THE POWERS REGULATOR CO.

MANUFACTURERS OF

AUTOMATIC TEMPERATURE CONTROLLING APPARATUS

5 SOUTH WABASH AVENUE

FWP

CHICAGO July 16 '19

Mr H. C. Winchell,
20 E. Jackson Boulevard,
Chicago.

Dear Mr Winchell:

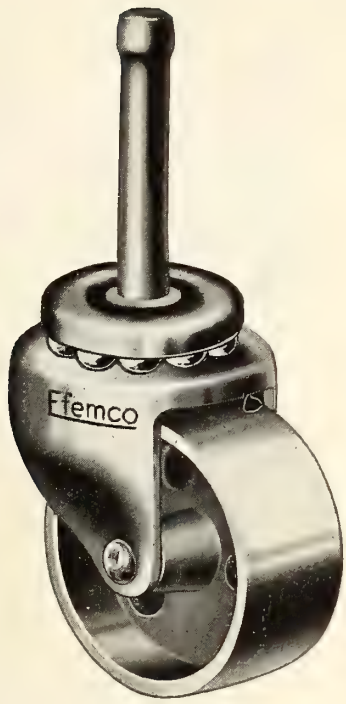
I am wondering if in our advertising you are striking hard enough on the idea that all processes which now involve manual labor must be carried on by machinery if such a thing is possible, and if we are to cope successfully with the conditions of increasing cost and scarcity of labor.

It was possible formerly to get a man for two or three dollars a day who was competent to watch a thermometer, all night, if necessary, and maintain a certain temperature with reasonable accuracy, provided of course, that he did not go to sleep or otherwise neglect the job. Such a man cannot be obtained now for double the money, or, for that matter, at any price, and apparently the only way to take care of this situation is to do everything by machinery that was formerly done by hand if the change can possibly be accomplished.

It seems to me that our advertisements ought to carry this thought in striking head-lines,—that the way to cope with the situation is to use machines where we formerly used men, and that Powers Heat Regulation takes a long step in this direction.

Yours very truly

J. D. Powers



An **Efemco**
Product

Gives Furniture Greatest Utility

Equip your furniture with Efemco Acme Ball Bearing Casters for greatest utility. They add positive portability and good looks at the same time. Made to swivel readily and easily, and rugged enough for all demands.

Efemco Acme Ball Bearing Casters are made with the same conscientious attention to detail that Foster, Merriam & Co., observe in the making of all Efemco Casters.

The new flat top prevents balls binding or falling out.

Sizes three, four, five, six, seven and eight. Write for complete catalogue and "Special" folder of newest Efemco Casters.

Period trimming for all styles and grades of furniture.

FOSTER, MERRIAM AND CO.

Hamilton, Ontario.

Meriden, Conn.

New York City

Efemco Products

Grip Neck Casters
Ball Bearing Casters
Roller Bearing Casters

Truck Casters
Furniture Trimmings
Automobile Accessories

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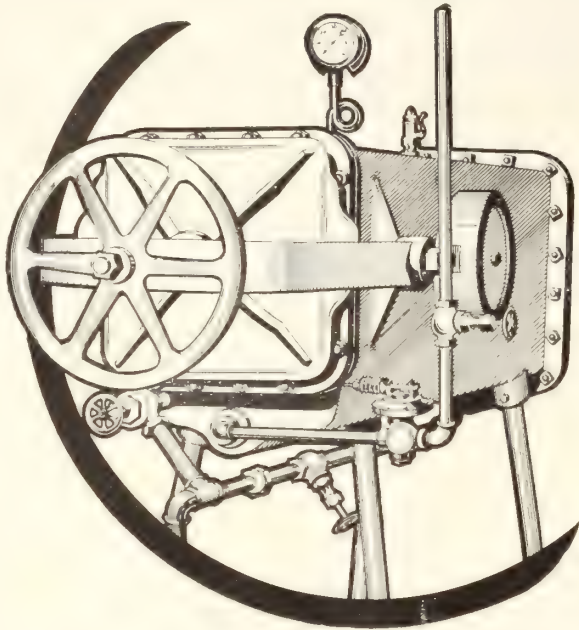


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**Perfection Wood Steaming
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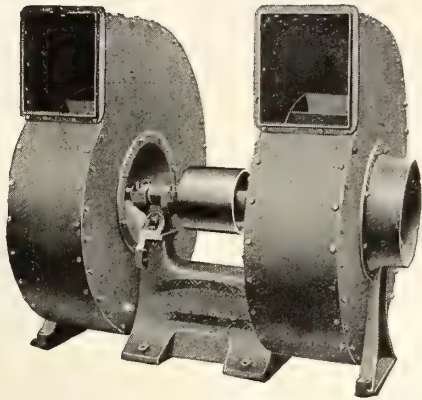
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Yates Machine Co., P. B., Hamilton, Ont.

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Preston Woodworking Machinery Company, Preston, Ont.
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Sawards Canada Saw Co., Montreal, Ont.
Wallace & Co., J. D., Chicago, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

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Williams Machinery Co., A. R., Toronto, Ont.

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Toronto Blower Company, Toronto, Ont.

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Garlock-Walker Machinery Co., Toronto, Ont.
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Mattison Machine Works, Rockford, Ill.
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Preston Woodworking Machinery Company, Preston, Ont.
Reynolds Machine Co., Massillon, Ohio.
Root Company, B. M., York, Pa.
Virginia Hole Sawing Co., Roanoke, Va.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

BOX BANDS

Laidlaw Bale-Tie Co., Hamilton, Ont.

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Canada Machinery Corporation, Galt, Ont.
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Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Neilson & Company, J. L., Winnipeg, Man.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CABINET PLANERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

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Overseas Reed & Cane Co., Ionia, Mich.

CARVING MACHINES

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.

CASTERS

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Wallace & Co., J. D., Chicago, Ill.

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Adjustable Clamp Co., Chicago, Ill.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

CRATING LUMBER

Elgin Jarvis Lumber Co., Toronto, Ont.

CUT-OFF SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

CUTTER HEADS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hawker Mfg. Co., W. S., Dayton, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Shimer Cutter Head Co., Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CYLINDER HEADS

Cowan & Company, Galt, Ont.

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Dry Kiln Door Carrier Co., Indianapolis, Ind.

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Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

DOWEL MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Dauber-Bell Machine Co., Oshkosh, Wis.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Hawker Mfg. Co., W. S., Dayton, Ohio.
Williams Machinery Co., A. R., Toronto, Ont.

DOWELS

Canada Wood Specialty Co., Ltd., Orillia, Ont.

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Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

DUST SEPARATORS

Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

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American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

EDGERS (Gang)

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

END MATCHING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

EXHAUST FANS

Canadian Blower & Forge Co., Kitchener, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Toronto Blower Company, Toronto, Ont.

FEED ATTACHMENTS

Garlock-Walker Machinery Co., Toronto, Ont.

FLOORING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

FLUTING HEADS

Fay & Egan Co., J. A., Cincinnati, Ohio.

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Yates Machine Co., P. B., Hamilton, Ont.

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Canada Glue Company, Brantford, Ont. . .
Certus Cold Glue Co., Detroit, Mich.
Kane Manufacturing Co., Chicago, Ill.
Perkins Glue Company, South Bend, Ind.

GLUE CLAMPS

Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Neilson & Company, J. L., Winnipeg.

GLUE HEATERS

Fay & Egan Co., J. A., Cincinnati, Ohio.
International Electric Co., Indianapolis, Ind.
Jackson, Cochrane & Company, Kitchener, Ont.
Pringle, R. E. T., Toronto, Ont.

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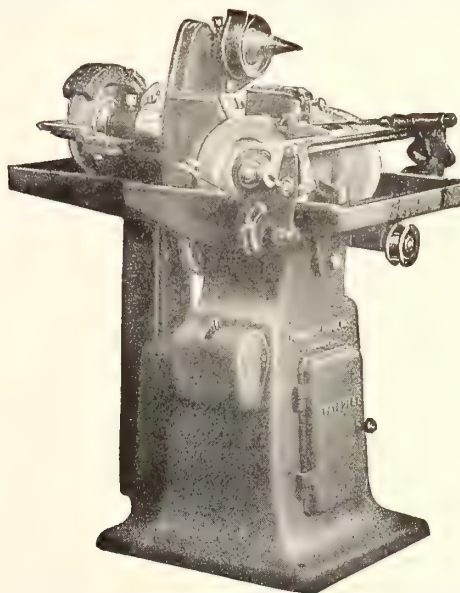
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Garlock-Walker Machinery Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

GRINDERS (Knife)

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Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)

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Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane, & Company, Kitchener, Ont.

GRINDING WHEELS

Carborundum Co., Niagara Falls, N.Y.

GROOVING HEADS

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Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.

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American Hardwood Lumber Co., St. Louis, Mo.
Anderson-Tully Co., Memphis, Tenn.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bellgrade Lumber Co., Memphis, Tenn.
Brown & Co., George C., Memphis, Tenn.
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Cornelius Lumber Co., St. Louis, Mo.
Gum Lumber Association, Memphis, Tenn.
Holly Ridge Lumber Co., Louisville, Ky.
Nickey Bros., Memphis, Tenn.
Paepcke-Leicht Lumber Co., Chicago, Ill.
Probst Lumber Co., Cincinnati, Ohio.
Thomas & Proetz Lumber Co., St. Louis, Mo.

HAND SCREWS

Fay & Egan Co., J. A., Cincinnati, Ohio.

HANDLE & SPOKE MACHINERY

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Whitney & Son, Baxter D., Winchendon, Mass.

HARDWARE

Laidlaw Bale-Tie Co., Hamilton, Ont.
Weber, Knapp Co., Jamestown, N.Y.

HARDWOOD LUMBER

Aberdeen Lumber Co., Pittsburgh, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
American Oak Mfrs.' Assn., Memphis, Tenn.
American Walnut Association, Washington, D.C.
Anderson-Tully Co., Memphis, Tenn.
Atlantic Lumber Company, Toronto, Ont.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Bellgrade Lumber Co., Memphis, Tenn.
Bonner & Sons, J. H., Memphis, Tenn.
Brown & Company, Geo. C.
Burns & Knapp Lumber Co., Conneautville, Pa.
Bury & Company, Robert, Toronto, Ont.
Cornelius Lumber Co., St. Louis, Mo.
Canadian General Lumber Co., Toronto, Ont.
Churchill-Milton Lumber Co., Louisville, Ky.
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Darby Hardwood Lumber Co., Memphis, Tenn.
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Dooley Lumber Co., F. T., Memphis, Tenn.
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Felger Lumber & Timber Co., Memphis, Tenn.
Gayoso Lumber Co., Memphis, Tenn.
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Heyser Lumber Co., W. E., Cincinnati, Ohio.
Holly Ridge Lumber Co., Louisville, Ky.
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Probst Lumber Co., Cincinnati, Ohio.
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Stark & Co., Jas. E., Memphis, Tenn.
Stimpson & Co., J. V., Owensboro, N. Y.

HYDRAULIC VENEER PRESSES

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JOINTERS

American Woodworking Machinery Company,
Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

LATHES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.

MACHINE KNIVES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

METALINE NAILS

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MITRE SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

MOULDERS

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Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company,
Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

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PERIOD TURNINGS

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Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLANING MILL MACHINERY

American Woodworking Machinery Company,
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Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

FORTABLE DRILLS

Wisconsin Electric Co., Wisconsin, U.S.A.

PRESSES (Veneer)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Co., Wm. R., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.

RESAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RIM AND FELLOE MACHINERY

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.

RIP SAWING MACHINES

American Woodworking Machinery Company,
Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company,
Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

RUBBING MACHINES

DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.
Paasche Air Brush Co., Chicago, Ill.

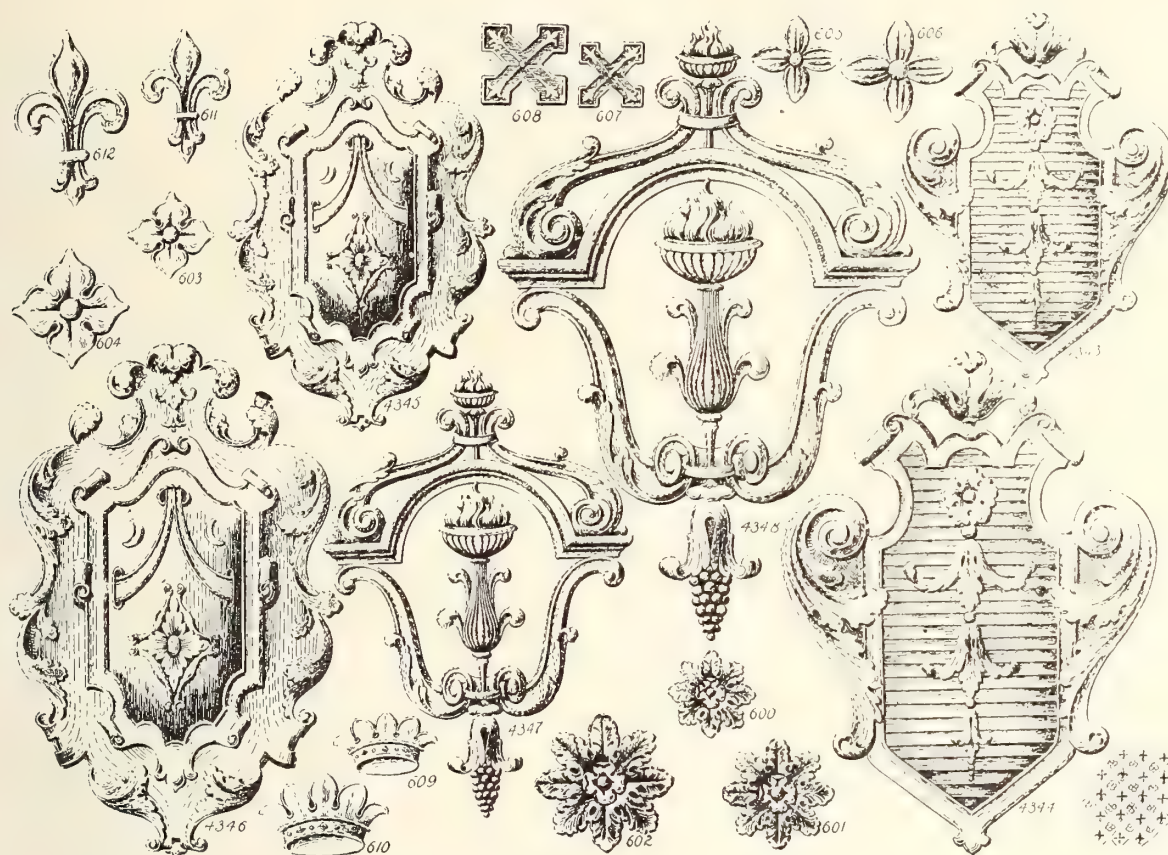
SAFETY DEVICES

Cowan & Company, Galt, Ont.

SANDERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company,
Preston, Ont.
Solcm Engineering Co., Sheboygan, Wis.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

Period Carvings



Have you a copy of our New Catalogue? If Not, Why Not?

Wood Fibre Ornamentation

WE SOLICIT YOUR INQUIRIES

J. WALTER & SONS

KITCHENER - ONT.

"Canadian Woodworker" Buyers' Directory—Continued

SASH, DOOR & BLIND MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAWS

Atkins & Co., E. C., Indianapolis, Ind.
Radcliff Saw Mfg. Company, Toronto, Ont.
Shurly-Dietrich, Ltd., Galt, Ont.
Silver Mfg. Company, Salem, Ohio.
Simonds Canada Saw Co., Montreal, Que.
Wallace & Co., J. D., Chicago, Ill.

SAW FITTING TOOLS

Crowell, D. J., Buffalo, N. Y.

SAW SWAGES

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.

SAW TABLES

Canada Machinery Corporation, Galt, Ont. ..
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Company, Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

SCRAPING MACHINES

Canada Machinery Corporation, Galt, Ont. ..
Garlock-Walker Machinery Co., Toronto, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.

SCREW DRIVING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Reynolds Machine Co., Massillon Ohio.

SCROLL SAWS

Canada Machinery Corporation, Galt, Ont. ..
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Radcliffe Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SECOND-HAND MACHINERY

Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

SHAPERS

American Woodworking Machinery Company, Rochester, N. Y.
Cowan & Company, Galt, Ont.
Canada Machinery Corporation, Galt, Ont. ..
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS

Canadian Bolwer & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

SPRING MATTRESS FRAMES

Newman Sons, J. P., Warton, Ont.

SPRINGS FOR UPHOLSTERY

Weber, Knapp Co., Jamestown, N. Y.

STAINS

Ault & Wiborg, Toronto, Ont.
Du Pont Fabrikoid Co., Toronto.
Marietta Paint & Color Co., Marietta, Ohio.

SINGLE SPINDLE BOXING MACHINES

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.

STAVE SAWING MACHINE

Whitney & Son, Baxter D., Winchendon, Mass.

SURFACERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Silver Mfg. Co., Salem, Ohio.
Tannewitz Works, Grand Rapids, Mich.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES

Fay & Egan Co., J. A. Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES

Walter & Company, B., Wabash, Ind.

TACKS AND NAILS

Dominion Tack & Nail Co., Galt, Ont.

TEMPERATURE REGULATORS

Canadian Powers Regulator Co., Toronto, Ont.

TENONING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TIME CLOCKS

International Business Machines Co., Toronto, Ont.

TRIMMERS

American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRUCKS

National Dry Kiln Co., Indianapolis, Ind.

UPHOLSTERER'S FLOCK AND BATTING

Bauers Limited, Waterloo, Ont.

VARNISHES

Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg Company, Toronto, Ont.
Du Pont Fabrikoid Co., Toronto.
Penfound Varnish Co., Toronto, Ont.

VARNISH SPRAYERS

DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

VENEERS

Bury & Compny, Robert, Toronto, Ont.
Central Lumber Co., Indianapolis, Ind.
Christmann Veneer & Lumber Co., St. Louis, Mo.
Dean Spicker Company, Chicago, Ill.
Empire Veneer Company, Chicago, Ill.
Freiberg Lumber Co., Cincinnati, Ohio.
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Geo. Kersley, Montreal, Que.
Korn-Conkling Co., Memphis, Tenn.
Long-Knight Lumber Co., Indianapolis, Ind.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Nartzik, J. J., Chicago, Ill.
National Veneer & Lumber Co., Indianapolis, Ind.
North Vernon Lumber Co., North Vernon, Ind.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Roberts & Co., John N., New Albany, Ind.
Southern Veneer Mfg. Co., Louisville, Ky.
Thompson Veneer Co., W. T., Edinburgh, Ind.
Toronto Veneer Company, Toronto, Ont.
Underwood Veneer Co., Wausau, Wis.
Veneer Manufacturers Co., Chicago, Ill.
Waetien & Co., George L., Milwaukee, Wis.

VENEER TAPE

Ideal Coated Paper Co., Brookfield, Mass.

VENTILATING APPARATUS

Canadian Blower & Forge Co., Kitchener, Ont.

VENEER JOINTERS

Garlock-Walker Machinery Co., Toronto, Ont.

VENEER MACHINERY

Garlock-Walker Machinery Co., Toronto, Ont.

VENEER PRESSES (Hand and Power)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Francis, Chas. E., Rushville, Ind.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Perin & Company, Wm. R., Toronto, Ont.

VICES

Fay & Egan Co., J. A. Cincinnati, Ohio.

WOOD FINISHES

Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg, Toronto, Ont.
Penfound Varnish Co., Toronto, Ont.

WALNUT LUMBER

American Walnut Association, Washington, D. C.
Pickrel Walnut Company, St. Louis.

WOOD SCREWS

Robertson Mfg. Co., P. L., Milton, Ont.

WOOD TURPENTINE

Brown Corporation, Quebec, Que.

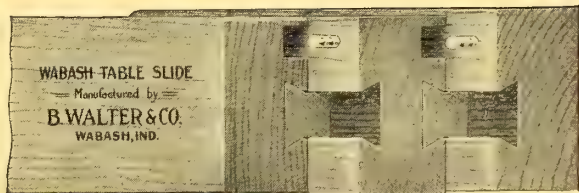
WOOD TURNING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Garlock-Walker Machinery Co., Toronto, Ont.
Mattison Machine Works, Rockford, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES

Fay & Egan Co., J. A. Cincinnati, Ohio.

THE SLIDE IS THE HEART OF YOUR EXTENSION TABLE



*If the Slide Does Not Work Properly
Your Whole Table is Condemned*

**Wabash Slides insure
Satisfied Customers**

SLIDE MAKING is a SPECIALTY BUSINESS

We can Furnish Better Slides for Less Cost

**Eliminate Slide Troubles by using
WABASH SLIDES**

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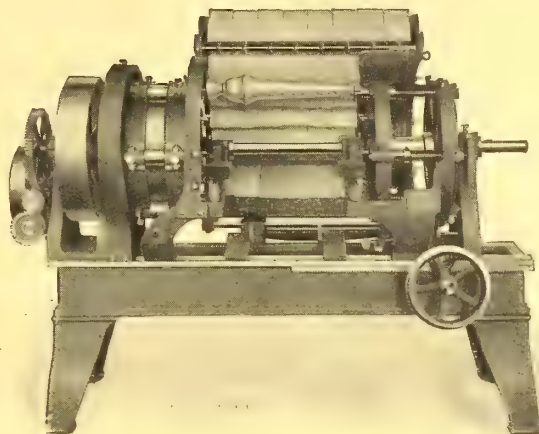
B. Walter & Company

Edsall St., Wabash, Ind.

Canadian Representative:

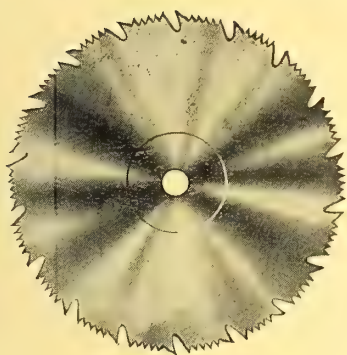
A. B. CAYA, 28 King St. East, Kitchener, Ont.

The Nash Sander For Your Furniture Turnings



is a proposition worth looking into. It goes a long way toward solving the labor problem and boosts the production at a decided reduction in cost. I can give you some very interesting details.

J. M. NASH, Milwaukee, Wis.



ATKINS

STERLING QUALITY

SAWS and KNIVES

The best steel—the most careful and accurate workmanship—the equipment that will eventually save you money.

Atkins Sterling Quality Saws and Knives are proving their superiority by competitive tests in the largest plants of the country. We welcome your most careful investigation, as we know the satisfaction that will result.

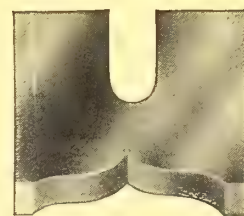
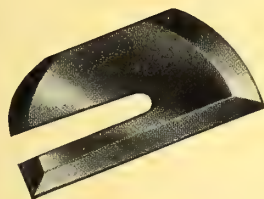
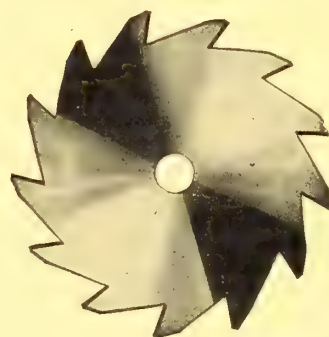
Write to-day for our Knife Booklet "CW"
and Pattern Template Paper.

E. C. ATKINS & CO.

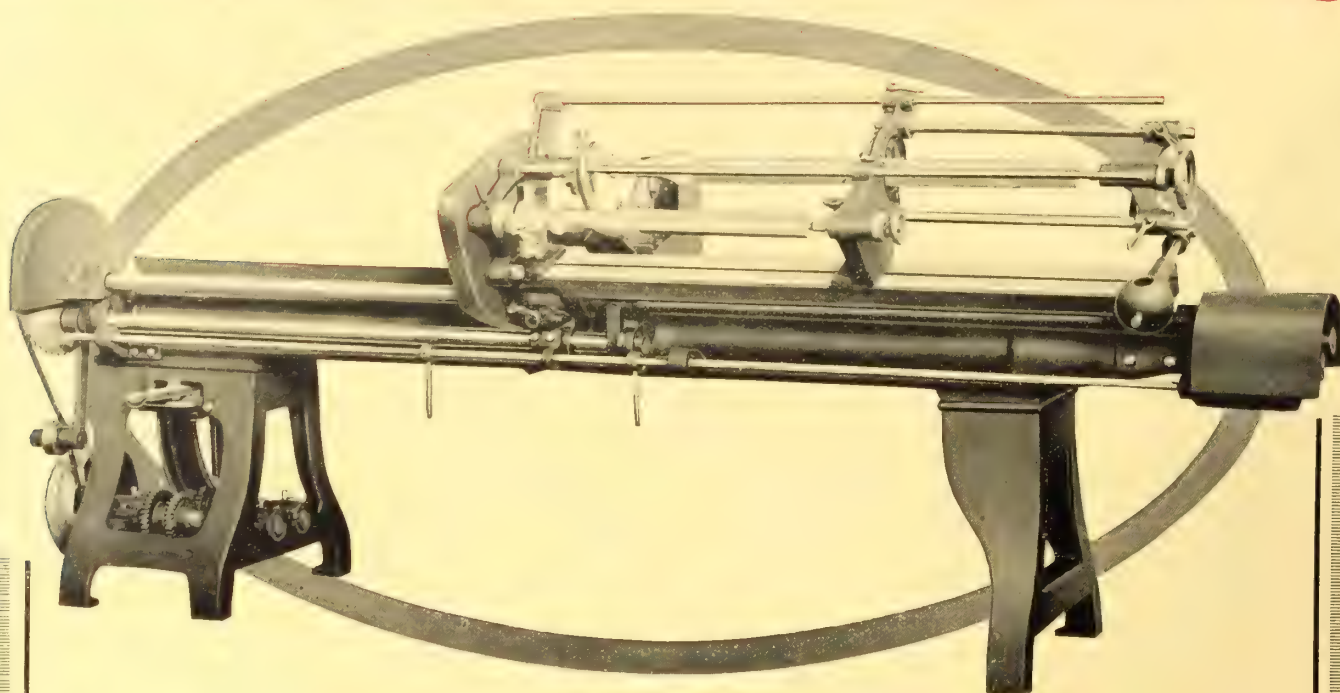
Makers of Sterling Saws

Factory—HAMILTON, Ont.

Vancouver Branch—109 Powell Street



For Shaping and Sanding Your Cabriole Legs



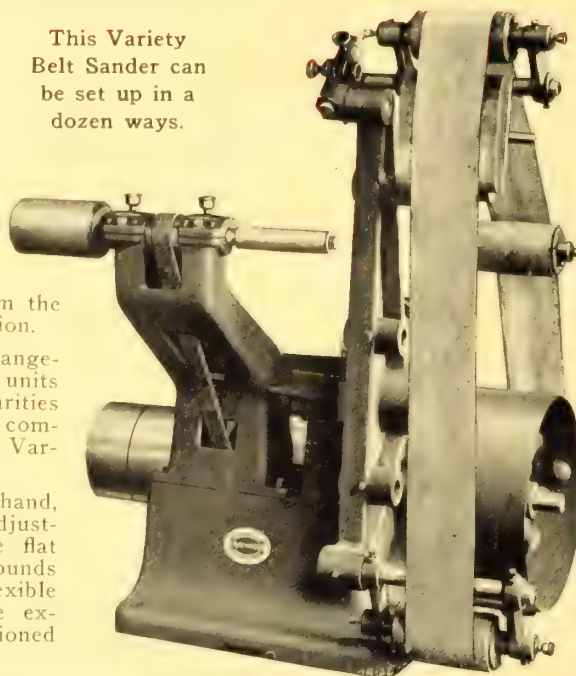
Use the Mattison Forming Lathe and Variety Sander

THE Mattison Automatic Leg-Forming Lathe will turn chair and table legs, dresser and chiffonier posts—in fact, practically any design of Cabriole Leg—twice as fast and at one-half the cost of any other method. It does its work automatically—the operator places the blank in the work supports and the cutters form the leg accurately in one operation.

Because of the compact arrangement of its various sanding units the many curves and irregularities of a Cabriole Leg are finished complete in one handling on the Variety Sander.

The leg is manipulated free-hand, against sanding rolls or the adjustable form, for finishing the flat curves and square faces. Rounds are applied against the flexible open belt or spindles. The extreme curves on the cushioned sand-covered spindles.

This Variety Belt Sander can be set up in a dozen ways.



BY having the Leg-Forming Lathe and the Variety Belt Sander set in combination, it is possible for one operator to take care of both machines.

Where it is impractical to have both machines set together, you can minimize labor costs and double production by having one man operate two of the lathes.

Whatever arrangement best suits your factory plan, you will find this Mattison Method—shaping the legs on the forming lathe and finishing them on the variety belt sander—the most satisfactory. It is economical. It is wholly efficient.

Send for Illustrated Bulletins Describing This Method

MATTISON MACHINE WORKS

Formerly at Beloit, Wisconsin

NOW AT

ROCKFORD, ILLINOIS, U.S.A.

CANADIAN WOODWORKER *and* Furniture Manufacturer



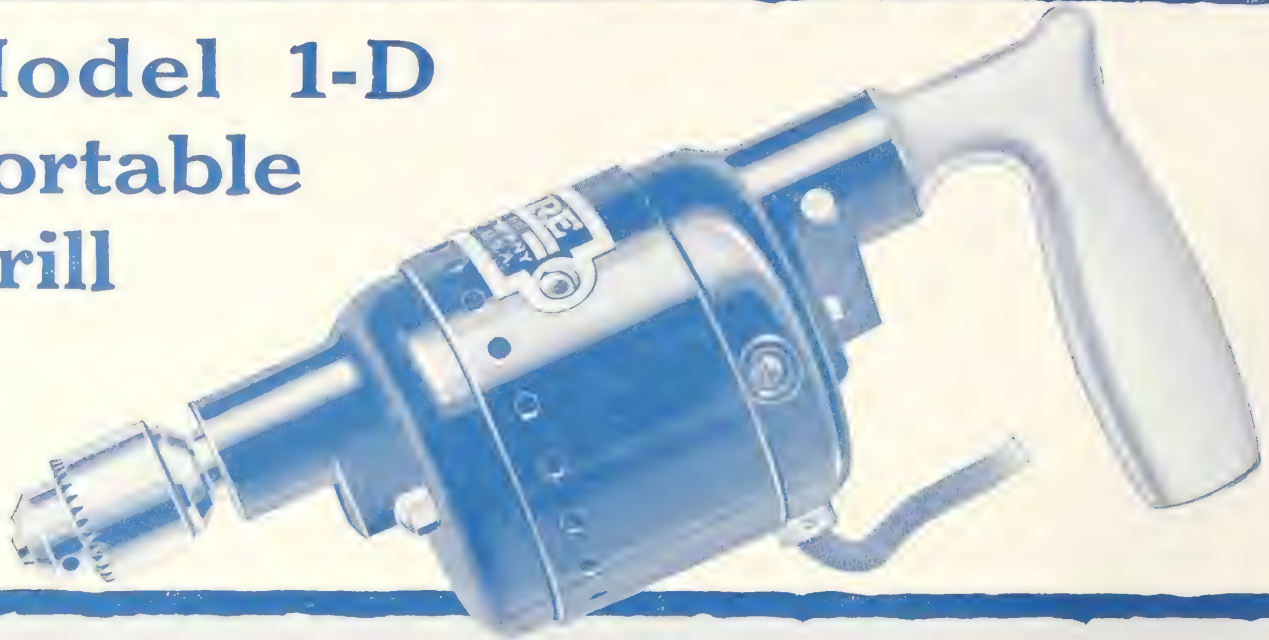
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No. 11.

Toronto, November, 1919

Annual Furniture Number

Model 1-D Portable Drill



HANDY—ECONOMICAL—EFFICIENT

Specifications:

Length—10 inches.

Weight—4 $\frac{3}{4}$ pounds.

Capacity—Steel, 0 to $\frac{1}{16}$ " Wood and alloys, 0 to $\frac{1}{4}$ ".

Motor—Universal, on either direct or alternating current.

Diameter of Motor—3 $\frac{3}{8}$ inches.

Spindle—Offset from center $\frac{1}{16}$ ".

Helical Gears.

Aluminum Handle.

Complete with 10-ft. cord, plug, switch and chuck.

Jacob's Chucks used as a regular equipment.

FOR speed in drilling and counter-sinking small holes, this tool is just what you need. It can be used on any kind of material—steel, iron, brass, aluminum or wood—and gives lasting service.

If your dealer cannot supply you with the Model 1-D, tell us about your requirements.

Wisconsin Electric Company
7117 Sixteenth Street, Racine, Wisconsin, U. S. A.

DUMORE GEARED ELECTRIC DRILLS

Garlock-Walker's List of Used Machines

Some Almost New—All in First-Class Shape

RESAWS AND BAND SAWS

- 54" Horizontal McDonough Band Resaw, with bevel siding attachment (will center to 12" timber).
- Fay & Egan No. 311 Bevel Band Saw.
- 24" American Circular Resaw.
- 42" American Band Saw.
- 36" Preston Band Saw.

SWING SAWS

- American Fig. 604 Heavy 48" Saws.
- " " 6100 8' 6" center 14" Saws.
- " " 610 7' 2" center 14" Saws.
- " " 610 10' center 14" Saws.

Preston with roller table and gauge.

CUT-OFF AND RIP SAWS

- 2 American No. 6 Automatic Railway Cut-off Saws.
- C. M. C. No. 606 Self-Feed Rip Saw.
- C. M. C. Cut-off Saw with sliding table.
- American No. 1 Hand Feed Rip Saw.
- 1 American No. 7½ Saw Bench.
- 2 Wood Frame Rip Saw Tables.
- Cowan & Co. Combination Saw Table.
- Cowan Tilting Top Saw Table.
- Preston Variety Saw Tilting Table.

SURFACERS

- American No. 146, 26" Heavy Double Surfer (6 sectional rolls).
- Ballantyne 24" Single Surfer.
- Buss 30" Single Surfer (Sectional roll and chip breaker).
- 42" Single Surfer, solid rolls.
- Cowan 24" Endless Bed Surfer.
- Jackson-Cochrane 24" Endless Bed Planer.
- 2-24" Ballantyne Undercut Planers.

MOULDERS

- Hernance 8" Four Side Moulder.
- McGregor-Gourlay 10" Four Side Moulder.
- Houston 8" Four Side Moulder.
- S. A. Woods No. 107 12 x 6 Four Side Inside Moulder.
- Hespeler 10 x 5 Four Side Outside Moulder.
- American 6" Four Side Moulder.
- Ballantyne 6" Four Side Moulder.
- 8" Four Side Moulder.

PLANERS AND MATCHERS

- No. 94 Berlin 15 x 6 Planer and Matcher.
- McKechnie & Bertram 24 x 6 Three Side Planer and Matcher.
- American Fig. 640, 30 x 20 Boss Timber Sizer (divided rolls).

JOINTERS

- 24" Porter Buzz Planer.
- 16" Jointer, Pedestal Type, adjustable tables.
- 12" Buzz Planer & Jointer.
- 16" Preston Buzz Planer & Jointer.

SANDERS

- American Columbia No. 2 49" Three Drum Sander.
- American Columbia No. 1, 48" Three Drum Sander.
- Berlin 60" Three Drum Sander.
- Berlin 42" Three Drum Sander.
- Columbia 30" Three Drum Sander.
- Iron Frame Double Drum Sander.
- Wood Frame Sanding Drum (22" dia.).
- American 6 Double Disc Sander.
- Arm Sander.

SHAPERS

- American No. 1 Single Spindle Shaper.
- Two Spindle C.M.C. Shaper, with adjustable c/s.
- Ballantyne Two Spindle Shaper.
- Cowan Single Spindle Shaper.
- Goldie-McCulloch Two Spindle Shaper.

DOVETAILERS

- 1 Advance 15 Spindle.
- 2 Dodds 10 Spindle.
- 1 Jackson-Cochrane 12 Spindle.

SCREW DRIVERS

- 2 Reynolds No. 2, one with boring attachment.

MORTISERS

- New Birtain Chain Saw Mortiser.
- Cowan No. 2 (M236) Chain Saw Mortiser.
- Upright Stroke Mortiser.
- Vertical Stroke Chisel Mortiser.

BORING MACHINES

- American No. 3 Vertical Borer.
- Andrews 16 Spindle Multiple Boring Machine.
- Andrews 10 Spindle Boring Machine.
- Andrews Double Column 15 Spindle Boring Machine, 60" between centers.
- Two Spindle Ballantyne Radial Boring Machine.
- Post Boring Machine.
- Four Spindle Horizontal Borer.

SASH & DOOR MACHINERY

- Cowan Sash Mortiser & Relisher.
- C.M.C. No. 502 Single End Tenoner with double copes.

- Goldie-McCulloch Single End Tenoner.
- Ballantyne Single End Tenoner with copes.
- Cowan Single End Tenoner with upper and lower copes and saws.

- Blind Slat Tenoner.
- Blind Stile Borer.
- Sash Sticker.
- Sash and Door Relisher.
- McGregor-Gourlay Door Clamp.
- Cant-Gourlay Tenoner.

RIM AND SPOKE MACHINERY

- Almy Rim Bending Machine with forms, straps, etc.
- Packing Machine for use with above.
- Montague Sleigh Runner Bender, with forms, etc.
- Wheel Hub Mortiser and equipment.
- Series of Spoke Machines, consisting of 3 Lathes, 1 Tenoner, 2 Throaters, 1 Facer, 3 Belt Sanders.
- Wood Frame Hub Boring Machine.
- Iron Frame Pivot Saw Frame for cutting wedges.
- Iron Hub Turning Machine.

FLOORING MACHINES

- American Double End Matcher.
- Sherman Flooring Grading Trim Saw.
- C.M.C. (Sherman Type) Double End Matchers.

BOX MACHINERY

- Shimer Single Head Box Board Matcher.
- Morgan No. 8 Lock Corner Machine.
- Morgan No. 1 Setting-up Machine.
- Morgan Trim Saw.
- Two 8-26" Open Back Morgan Nailers.

FILING ROOM EQUIPMENT

- American Universal Cutter Head Grinder (for hardwood heads).
- American No. 9 31" Thin Knife Grinder.
- Hart Circular Saw Gummer.
- No. 2 Baldwin T. & B. Automatic Band Saw Sharpener, for blades 2" to 8", with pulleys.
- No. 8F Baldwin, T. & B. geared roll Stretcher, without legs.
- 1 pair 2½" Hammers, doghead and crossface.
- 8" Straight Edge.
- 8" Tension Gauge.
- No. 105 Hanchett Circular Saw Set.
- No. 442 American Mach. Brazing Forge.
- No. 84 American Mach. Narrow Band Saw Brazier.
- Metcalf Emery Dresser.
- Ideal Swage 18 to 26 gauge.
- Ideal Swage Shaper 16-22 gauge.
- American Machinery Co. No. 40 A.B.T. & B. Band Saw Filer.
- 6 x 10 x 5" Anvil, Hanchett.
- 7 x 48 x 3" Levelling Block.
- No. 748 Hanchett Automatic Circular Saw Sharpener, rip and cross-cut saws 8 to 48".
- No. 2 Syle D Circular Saw Swage, 11 to 16 gauge and stand.
- Circular Saw Set B. T. & B. No. 10.
- Disston Saw Vise, 12" No. 3D.
- Hanchett 5-0 No. 2 Straight Edge Double Back Gauge.
- Levelling Block 8" x 48" x 3".

MISCELLANEOUS

- 2 Whitney 15" Wood Scraping Machines.
- American 12" Solid Roll Scraper.
- 16" Linderman Auto. Dovetailer and Glue Jointer.
- 12" Linderman Auto. Dovetailer and Glue Jointer.
- 8" Linderman Auto. Dovetailer and Glue Jointer.
- 6" Linderman Auto. Dovetailer and Glue Jointer.
- Yankee Whittler (Valley City Rounder).
- 3 Cowan Dado or Cut-off Machines, 42".
- 36" Francis Double Roll Glue Spreader with 2-53 gal. converters.
- 4 Sections 38" Veneer Press.
- 36" Double Roll Glue Spreader.
- 60" Slow Speed Exhaust Fan.
- No. 16 Detroit Blower, Inlet 17", Outlet 16".
- 7 Bowser Tanks, with pumps and fittings.
- Silver & Son Graining Machine.
- 3 Embossing Machines.
- 1 Hand Turning Lathe.
- 4 Machines for Beading and Turned Mouldings.
- Smart Duplex Pump.
- Goldie-McCulloch Single Action Pump.
- Mattison Electric Rubbing Machine.
- Oliver Wood Trimmer (pedestal type).

DOWEL MACHINES

- Cowan No. 2 Rod and Dowel Machine, with heads.
- 2 Dowel Machines, capacity to 1" and 1½".
- Goldie-McCulloch Dowel Sticker.
- McGregor-Gourlay Dowel Machine, ¼" to ½", adjustable head.
- Hand Feed Dowel Machine.
- Machine for making Architrave Mouldings.
- Double End Chucking Machine for Broom handles.
- Holmes Broom Handle Boring and Chucking Machine.

The above is only a partial list. If you want new or used machines for any purpose, write to us.

GARLOCK-WALKER MACHINERY CO., Ltd., 32 Front St. W., TORONTO

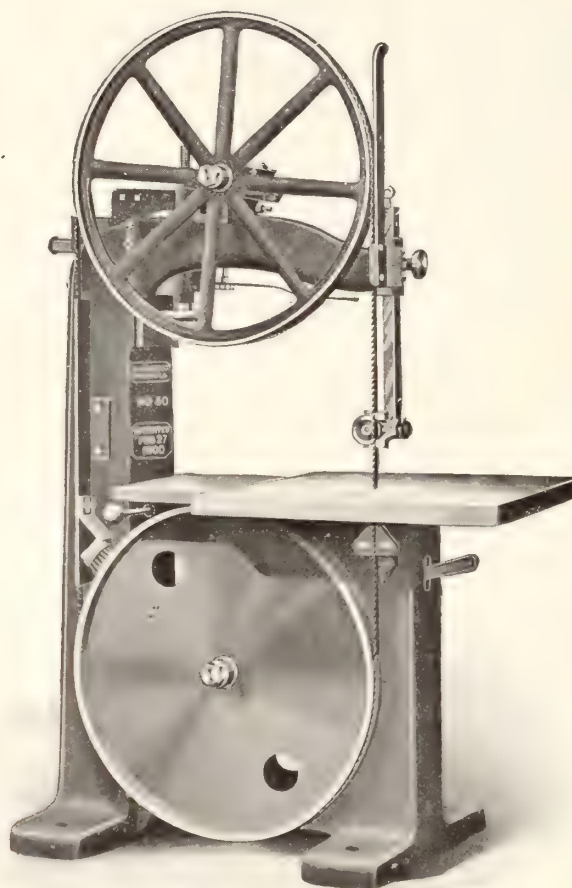
MONTREAL

TORONTO

WINNIPEG

Everything in Machinery.

See our Advertisements, Pages 37 to 40.



Save 25% to 50% of Blade Upkeep and Power Cost Get Two, Even Three Times As Much Work

It's not the blades that wear out that cost, it's those that break.

It's the broken blades that cut down productive time and cost to repair and to replace.

Blade breakage is reduced to a minimum on Fay-Egan No. 50-36" Square Column "Lightning Line" Band Scroll Saws.

The Fay-Egan "Knife Edge" Blade Tension, made on the principle of a fine laboratory balance scale, is so sensitive that it compensates for changes in atmospheric conditions—yet, so flexible, you can pass a block between blade and wheel, while running, without breaking the blade. Folks tell us blade expense on "No. 50" averages 50 to 75 per cent. less than on the old timers.

The solid lower wheel acts like the fly wheel on your engine, its momentum carrying the load, so that the power consumption is reduced fully one-half, while at the same time it controls the light-spoked upper one, preventing over-running and choking down on a heavy cut.

The heavy square column eliminates vibration and permits the wheels to be revolved at 50 to 100 per cent higher speed, increasing the cutting capacity to double, and in some cases, triple that of the ordinary band saw.

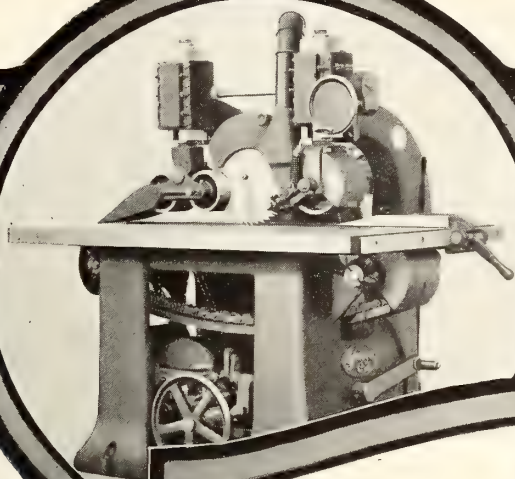
As a user of saws, you cannot afford to ignore what Fay-Egan Square Column Band Saws are doing for others and can do for you. An investigation does not oblige you.

Write for Bulletin M-4

J. A. FAY & EGAN CO.

153-163 W. Front St.

CINCINNATI, O.



***"The Invariable
Choice of the
Man Who Knows"***



Type G-2 Edging and Ripping Saw

The Yates Type G-2 is the peer of all straight line edging and ripping saws because durability and efficiency are combined to such a degree that it will do better work for a longer period of time than any other machine of its class.

A recently-patented safety device, shown in section below, positively prevents splinters from being thrown back toward the operator.

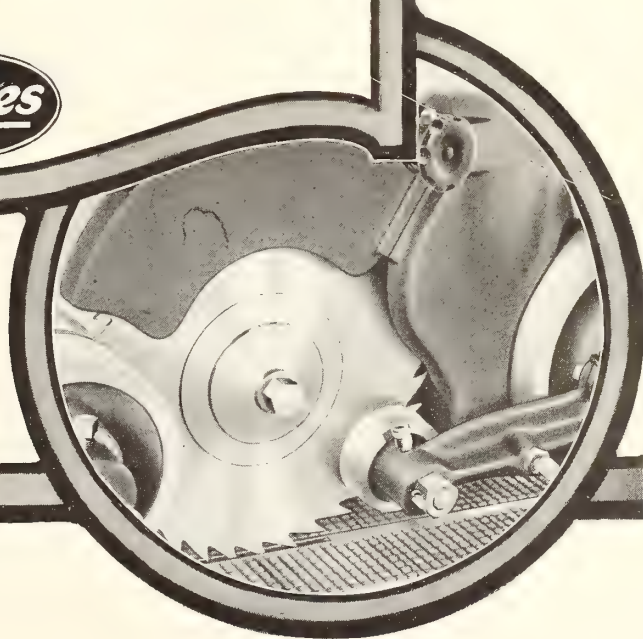
Send for our illustrated circular on this machine. It contains eight pages of valuable matter for the mill man.



P. B. Yates Machine Co. Ltd.

HAMILTON, ONT. CANADA

U.S. Plant, Beloit, Wisconsin



CANADA'S LEADING
MACHINERY
HOUSE

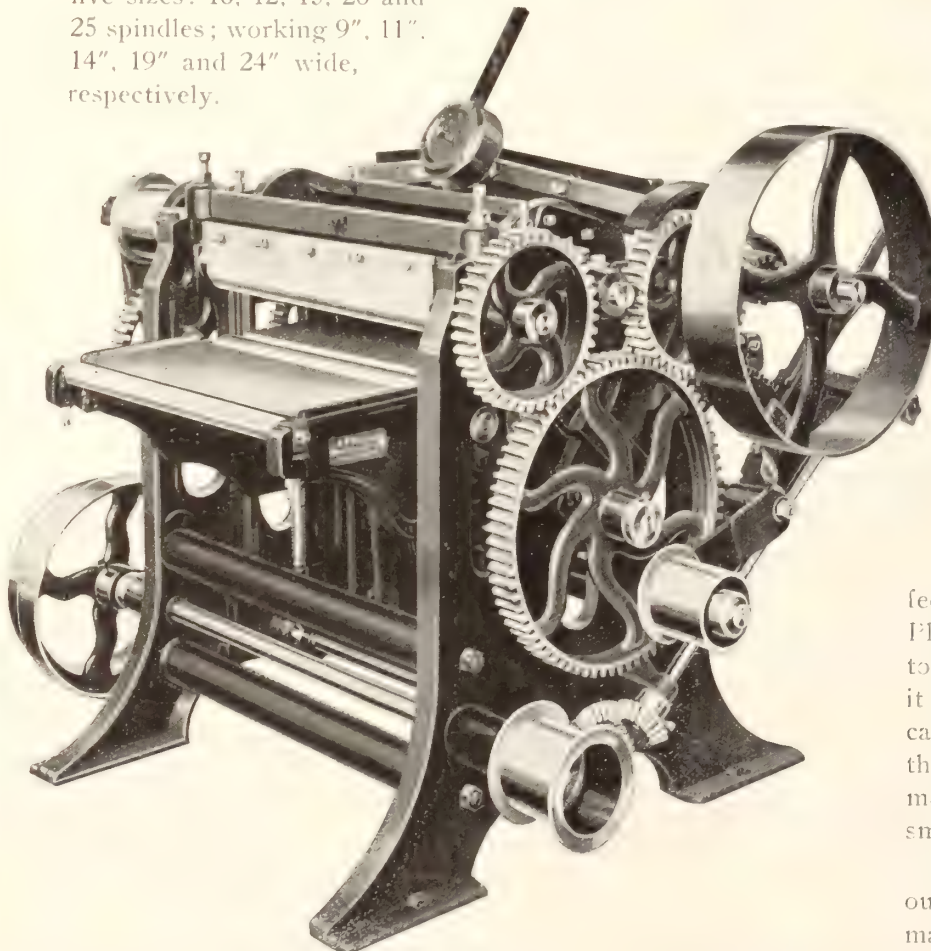
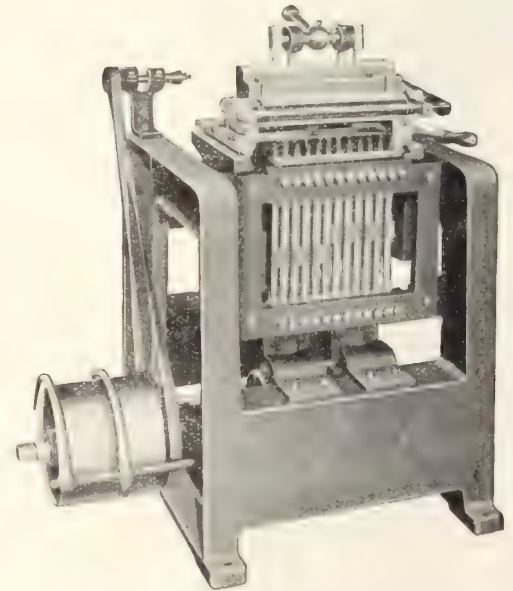
The A.R. WILLIAMS & COMPANY LIMITED

64-66 Front Street W Toronto, Canada

ST. JOHN, N. B.
WINNIPEG
VANCOUVER

DODD'S DOVETAILERS

The illustration on the right shows a front view of a 12 Spindle Dovetailing Machine, a compact machine that will be found exceedingly efficient and yet simple in operation. All machines are direct gear driven from countershaft, requiring no belts except the belt drive. Special gears on spindles, new style bed for straight or swell front and will work 1" or 1/2" centres, visible or blind dovetail. For furniture or box work. Made in five sizes: 10, 12, 15, 20 and 25 spindles; working 9", 11", 14", 19" and 24" wide, respectively.



A Record Service by The "Eclipse" **SURFACE PLANER**

With a record of over 2,000 in actual use and giving full satisfaction and perfect results the "Eclipse" Surface Planer is bound to be of interest to you. For the furniture factory it would be an ideal machine because of its ability to produce the highest grade of planing and most suitable where very thin, smooth work is required.

Write us for full particulars on our entire line of woodworking machinery of all descriptions.

The "Shimer Limited" Expansion Head

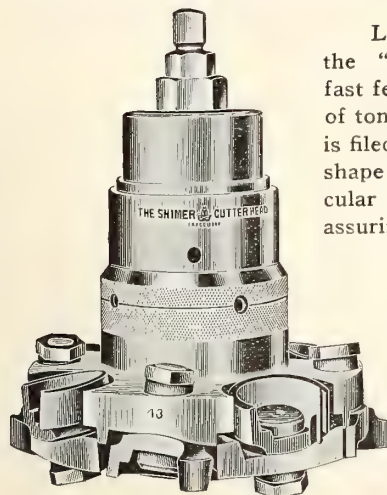


Fig. 627

Let us draw your attention to the advantages of using the "SHIMER CUTTER HEAD" for general Mill and fast feed Planer work. The Cutter is turned to cut the shape of tongue and groove desired, so that to sharpen the cutter it is filed or ground on its face, guaranteeing the user the same shape of cut during the life of the cutter. The bit being circular has from 3½ in. to 5 in. cutting length to the cutter, assuring long wearing life to the cutters.

Note that the cutter, being fastened to a concave seat on a compound angle, assures the user of the proper clearance of cutters, consequently they never burn.

These heads are fitted with or without the Self-Centering Sleeve, and made Expansion or Solid, to suit the customer's wishes.

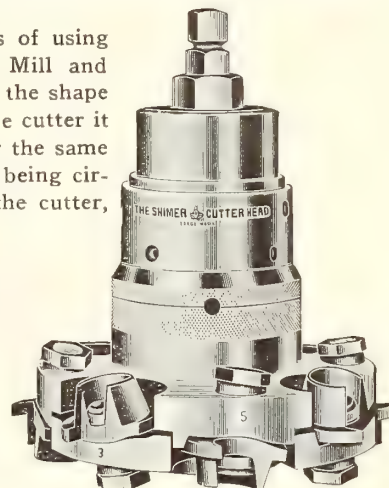


Fig. 268

Shimer Heads have been in use for sixty years, and their reliability and reputation have spoken for them in the past. Let us know your wants and we will guarantee their reliability at the present.

SHIMER CUTTER HEAD CO. OF CANADA, LIMITED

Successors to Samuel J. Shimer & Sons, Inc.

GALT, ONTARIO



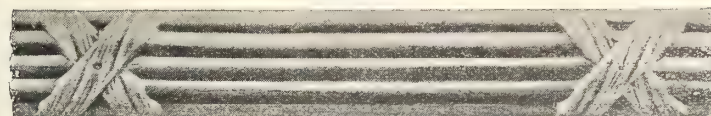
M 76



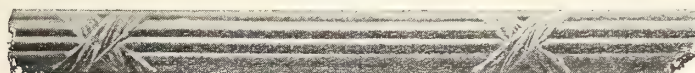
M 86



M 52



M 104



M 95

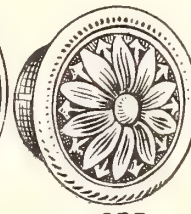
MOULDINGS We are making more Period Mouldings than ever before. Orders should be placed early to assure your supply when needed.

KNOBS The Period Knobs we placed on the market a few months ago are proving very popular. If you have not received samples ask for them now.

ROSETTES A new Period item to accompany the knobs.



OP8



OP5



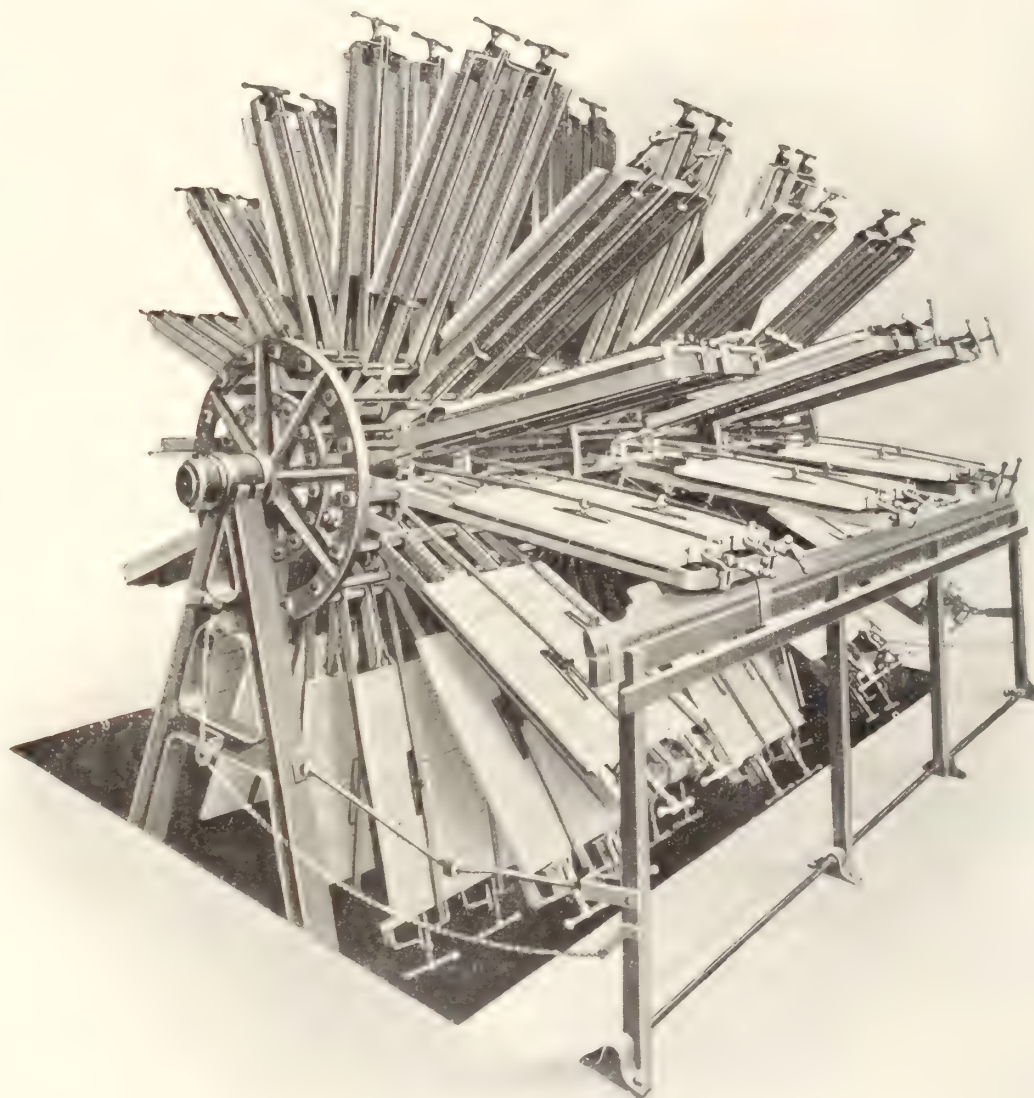
OP6

Waddell Manufacturing Company

Coldbrook and Taylor, N. W.

Grand Rapids, Mich.

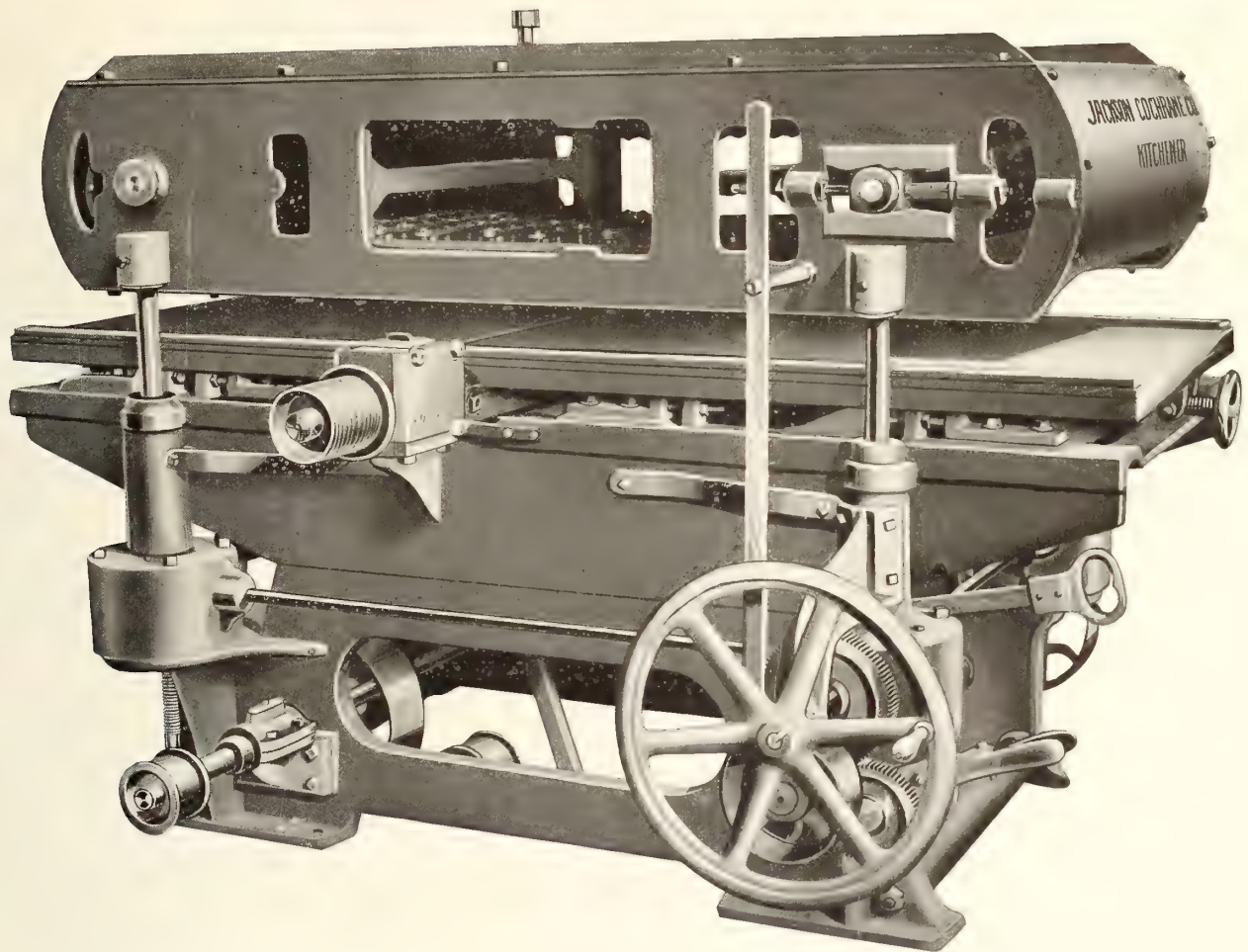
The
No. 200 Perpetual Revolving Clamp
for Simplicity of Operation



Wonderfully simple in operation is the No. 200 Perpetual Revolving Clamp. Its efficiency marks its use as practically indispensable for increased output of the better kind of work. For chair seats, furniture, dimension stock, school desks, refrigerator ends, special shapes, etc., it is without equal. It takes in $2\frac{1}{2}$ " in thickness up to 40" wide and 14' long. Many features of this machine will interest and please you. Write us for further particulars regarding this and many other machines that will assist for greater output.

Jackson, Cochrane & Company
KITCHENER - CANADA

The
Herzog Self-Feed Jointer
the Efficiency Machine



Efficiency based on a foundation of simplicity and greater production is the efficiency of the Herzog Self-Feed Jointers. It will produce better work from three to five times as fast as hand jointers with a considerable saving in floor space. Simplicity marks every operation of this machine, in fact two boys can operate it and produce perfect results. The Herzog Self-Feed Jointers handle stock varying in width from 1 inch to the full width of the jointer; they operate fast or slow and require only one-fifth the sharpening of knives as the hand jointers. Let us send you further information.

Jackson, Cochrane & Company
KITCHENER - CANADA

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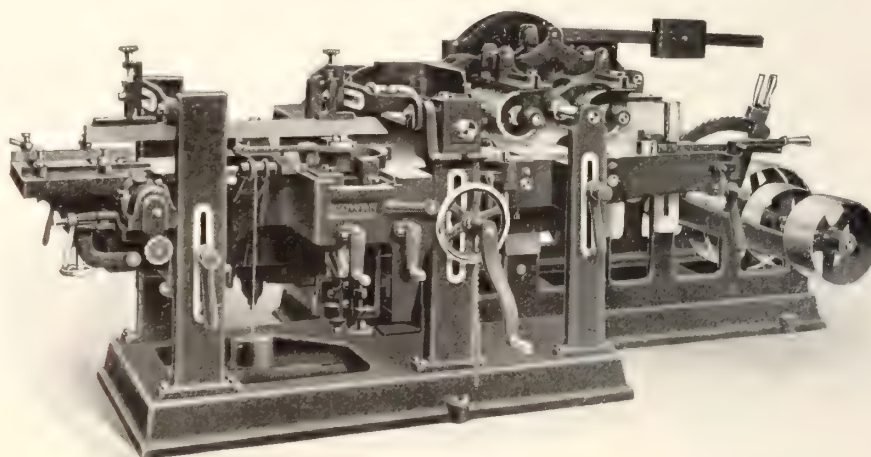
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(Continued on page 14)

Moulder No. 289

10" or 12"

Table lowers 8"

Full of Distinctive
Features

Cowan Woodworking Machinery is dependable, efficient and creates a great saving in operating costs. We manufacture

Planers
Moulders
Shapers
Tenoners

Mortisers
Borers
Lathes
Resaws

Band Saws
Scroll Saws
Cross Cut Saws
Rip Saws

Sanders
Grinders
Clamps
Veneer Presses

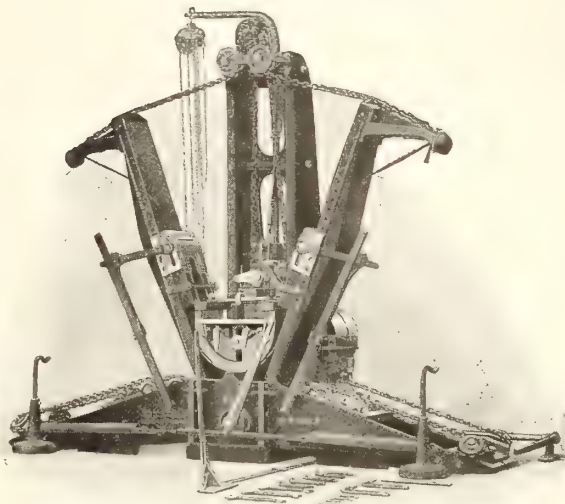
COWAN & CO. OF GALT LIMITED - Galt, Ontario

Why Struggle Along Continually With Obsolete Wood Bending Methods

when a little time spent investigating Defiance bending machines would lead to the salvage of your present material wastage—increase your present output, and reduce losses in breakage to a minimum. Defiance bending machinery is serving wood benders everywhere throughout the world. Its success, so pronounced and so long continued, proves Defiance methods of wood bending the most correct in use today.

DEFIANCE HIGH PRODUCTIVE WOOD BENDING MACHINERY

is built in various designs and sizes, and particularly adapted to bending rims for artillery wheels, automobile, auto-truck, wagon and carriage wheels, table rims, plow and truck handles, hames, bows for vehicle tops, and steering wheel rims. For the complete manufacture of the foregoing products many of the largest manufacturers all over the world are using Defiance equipment—all of which is a proven success and high productive machinery.



12" Patent Rim, Felloe and Round Bending Machine

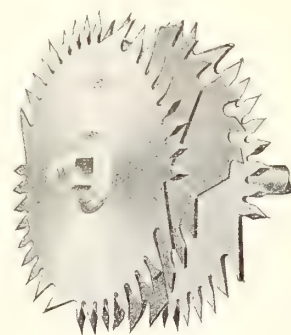
Illustrated and descriptive matter on your requirements in wood bending machinery will be mailed on request.

THE DEFIANCE MACHINE WORKS

New York City

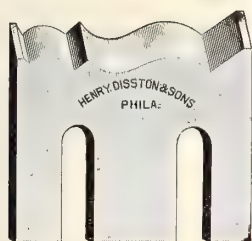
DEFIANCE, OHIO, U.S.A.

London, England



DISSTON 'SAWS AND KNIVES

The installation of Disston Saws and Knives—made from the famous Disston Crucible Steel—means more and better work. In the shops where cutting cost and output are carefully checked and counterchecked you will usually find Disston equipment.

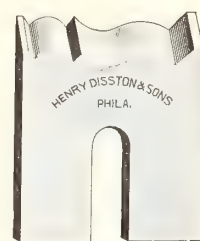


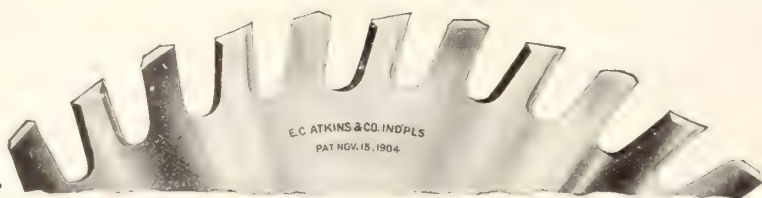
HENRY DISSTON & SONS LIMITED

TORONTO

CANADA

Branch: Vancouver, B. C.

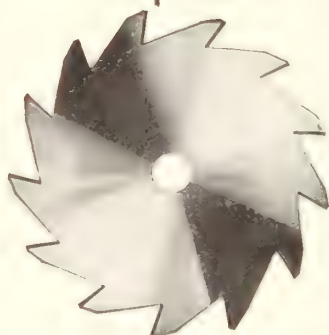




ATKINS

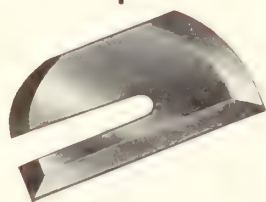
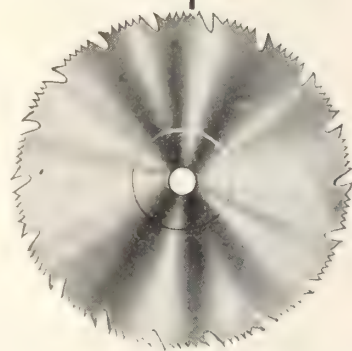
Sterling Quality

Saws and Knives Speed-Up Production



By equipping your entire factory with Atkins "Sterling Quality" Saws and Knives you go a long way toward attaining maximum production.

Scientific methods of manufacture, tried and tested improvements and accurate workmanship have demonstrated their superiority in all Atkins products. From the smallest knife to the largest saw that same high standard of manufacture is maintained.



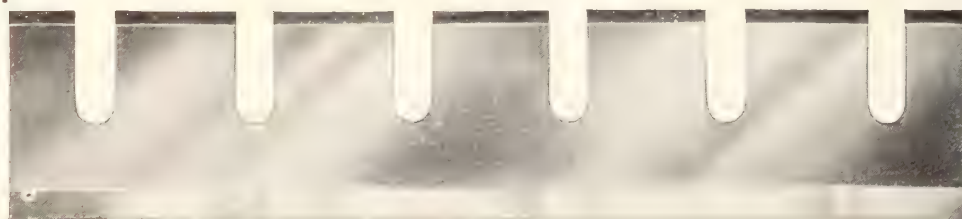
Write for a copy of our Knife Booklet
and Pattern Template Paper.



E. C. ATKINS & CO.

Factory at HAMILTON, ONTARIO

Vancouver Branch—109 Powell St.



DO NOT GAMBLE ON YOUR VENEER TAPES

*Always buy the material with the
guarantee behind it*

Ideal Veneer Tapes

Profit by our many years' careful application
to the subject of veneer tapes.

We have several qualities in both cloth and
paper, plain and perforated, which will cover
all your requirements beautifully.

Write for our booklet and full sample coils.

IDEAL COATED PAPER Co.

The Veneer Tape Specialists,

BROOKFIELD, - - MASS.

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DRY STOCK

Ready for Shipment

GUM

74,600 ft.	1 1/4 1st and 2ds Red
123,859 "	1 1/4 No. 1 Com. and Sel. Red
11,167 "	4/4 No. 2 Com. Red
395 "	6 1/4 No. 2 Common Red
630 "	8 1/4 1st and 2ds Red
1,945 "	8 1/4 No. 1 Com. and Sel. Red
175 "	8/4 No. 2 Common Red
28,309 "	1 x 13 1/2" Box Boards
30,000 "	1 x 12 1/2" Box Boards
35,397 "	13" and up 1st and 2ds Sap
26,194 "	4/4 1st and 2ds Sap
226,140 "	4/4 No. 1 Com. and Sel. Sap
78,747 "	1 1/4 No. 2 Common
33,000 "	5/4 No. 2 Common Sap
5,657 "	5/4 No. 3 Common Sap
11,000 "	5 1/4 No. 3 Common
2,503 "	6/4 No. 1 Com. and Sel. Sap
811 "	6 1/4 No. 2 Common Sap
150 "	6/4 No. 3 Common Sap

LA. CYPRESS

16,366 ft.	4/4 1st and 2ds
38,725 "	4/4 Select
203,085 "	4/4 No. 1 Shop
61,000 "	4/4 No. 1 Common
28,205 "	4/4 No. 2 Common
47,635 "	1 1/4 Peckie
5,000 "	6/4 1sts and 2ds
5,000 "	6/4 Select
15,000 "	6/4 No. 2 Common

LA. CYPRESS (Cont'd.)

7,263 "	6 1/4 Peckie
1,070 "	8/4 Select
11,550 "	8/4 No. 1 Shop
4,630 "	8/4 No. 1 Common
8,630 "	8/4 No. 2 Common
2,250 "	8 1/4 Peckie
15,246 "	5/4 No. 1 Common
27,586 "	5/4 No. 2 Common
5,696 "	5/4 Peckie

6/4 & 8/4 DOG BOARDS

61,000 ft.	Cypress, mostly 6/4
5,900 "	Cottonwood

PECAN

5,724 ft.	8 1/4 No. 3 Common
-----------	--------------------

RED OAK

19,390 ft.	10/4 1st and 2ds Oak
24,930 "	10/4 No. 1 Com. and Sel.
11,080 "	10/4 No. 2 Common
63,455 "	4/4 1st and 2ds
101,527 "	4/4 No. 1 Com. and Sel.
11,249 "	5/4 No. 1 Com. and Sel. Pl. Red
5,400 "	6/4 1sts and 2ds Pl.
13,425 "	3/4 No. 3 Common
23,118 "	4/4 No. 1 Com. and Sel. Qtd.
2,429 "	4/4 No. 2 Common Qtd.
1 car	1 1/4 1st and 2ds Qtd. White

RED OAK (Cont'd.)

1/2 "	4/4 No. 1 Com. and Sel. Qtd.
1/2 "	4/4 No. 2 Common Qtd. White

LA. WHITE ASH

3,355 ft.	4/4 No. 1 Common
13,142 "	5/4 No. 1 "
5,850 "	8/4 No. 2 "
1,540 "	4/4 No. 3 "
61,584 "	5/4 No. 3 "
5,564 "	6/4 No. 3 "
12,550 "	8/4 No. 3 "

ELM

7,980 ft.	4/4 Log Run
320 "	5/4 " "
7,365 "	6/4 " "

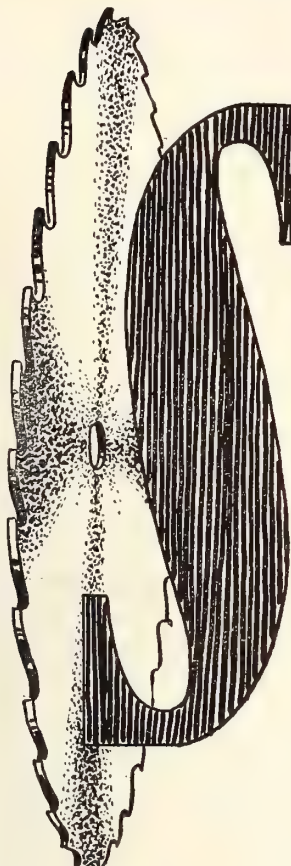
YELLOW PINE—AIR DRIED

12,143 ft.	1 x 6 and up B. & Btr.
11,640 "	1 x 4 No. 1 and No. 2 Common
7,100 "	1 x 4 and 1 x 6 No. 1 & 2 Com.
6,825 "	1 x 8 No. 1 and No. 2 Common
7,530 "	1 x 10 No. 1 and No. 2 Common

COTTONWOOD

9,520 ft.	13 1/2" Box Boards.
2,763 "	4/4 1st and 2ds
17,207 "	4/4 No. 1 Common and Selects

ABERDEEN LUMBER COMPANY
PITTSBURGH, PA.



Simonds Saws

Simonds Circular and Band Saws are the Climax of Saw Efficiency. At the woodworking shops, planer mills and box factories they are first choice of workmen who know what Quality in saws signifies when there is a big cutting job before them. The mill man realizes the value of Simonds Circular Saws because they stand up under heavy feed, hold their tension and do not crack.

There is no equal to a Simonds Band Saws, unless it is another Simonds Saw. They are uniform. Made of the finest grade of nickel alloy steel, manufactured in our own mills by expert workmen. Simonds Band Saws, narrow and wide, lead competition.

We will be glad to quote prices on Saws, Planer Knives or Moulder Knives.

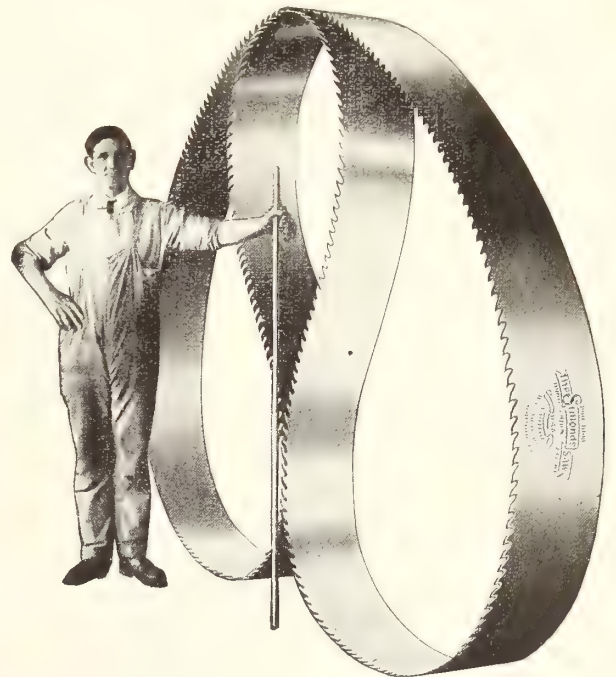
Simonds Canada Saw Co., Ltd.

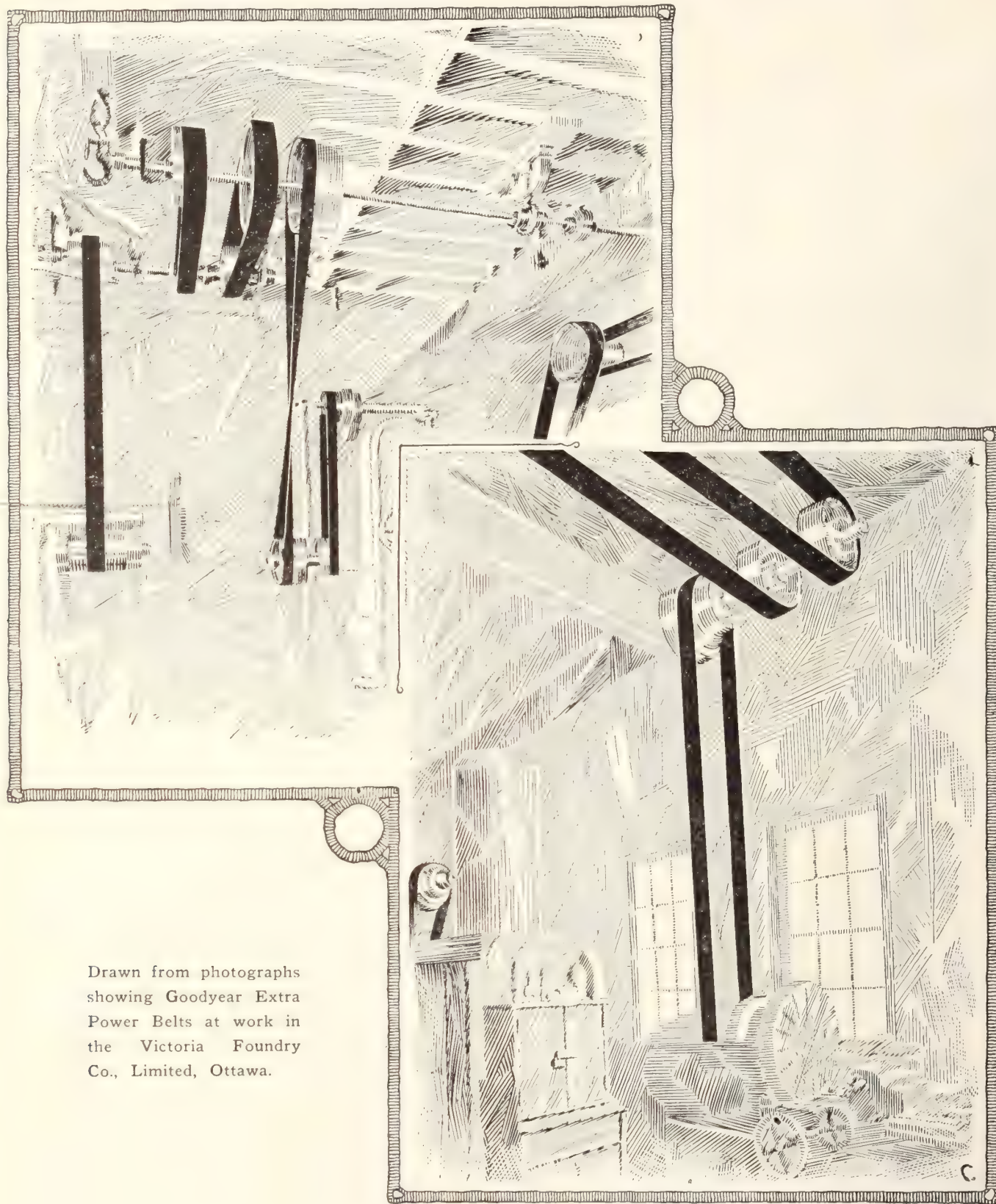
"The Saw Makers"

St. Remi Street and Acorn Avenue
Montreal, Que.

Vancouver, B. C.

St. John, N. B.





Drawn from photographs
showing Goodyear Extra
Power Belts at work in
the Victoria Foundry
Co., Limited, Ottawa.

GOODYEAR
MADE IN CANADA

REDUCE BELT REPLACEMENT

Changing belts costs money.

Belts which wear out quickly must be replaced frequently.

This costs money for belting.

Costs money for idle machinery.

Costs money for idle hands.

Costs money because piece-workers become dissatisfied.

Goodyear Extra Power Belting reduces belting costs.

It wears long, and so makes the belting itself cost less.

It keeps machinery and men busy, and enables everyone to produce at greatest efficiency.

This has been the experience of every one of the more than a thousand Canadian plants which use Goodyear Extra Power Belting.

For example here is what the Victoria Foundry Company, of Ottawa, say about their Extra Power:

VICTORIA FOUNDRY COMPANY, LIMITED

Ottawa,

Gentlemen;

We have certainly had great satisfaction from your "Extra Power" Belting.

We have used it on all kinds of machines. It has been in service a surprising length of time—and is still in service.

For instance—

16 months on the cone of a 30-inch Lodge & Shipley lathe.

18 months on the cone of a 24-inch lathe.

24 months on a 30-inch drill press.

12 months on main drive of a 36-inch planer.

And all still in service. Not a replacement so far. We are mighty pleased.

Yours very truly,

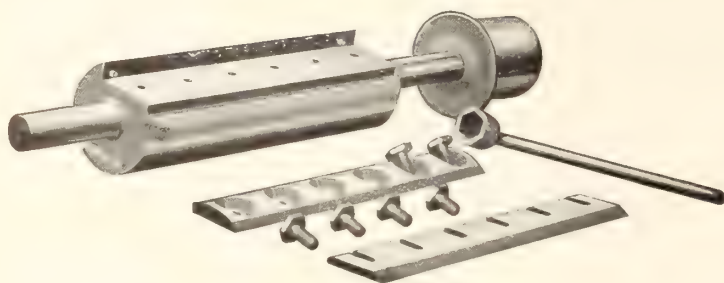
THE VICTORIA FOUNDRY COMPANY, LIMITED,

Men trained by Goodyear to solve belting problems are always available to confer with you. No obligation. Just wire, phone or write the nearest branch.

The Goodyear Tire & Rubber Goods Co. of Canada, Limited

*Halifax, St. John, Quebec, Montreal, Ottawa, Toronto, Hamilton, London, Winnipeg,
Regina, Saskatoon, Calgary, Edmonton, Vancouver*

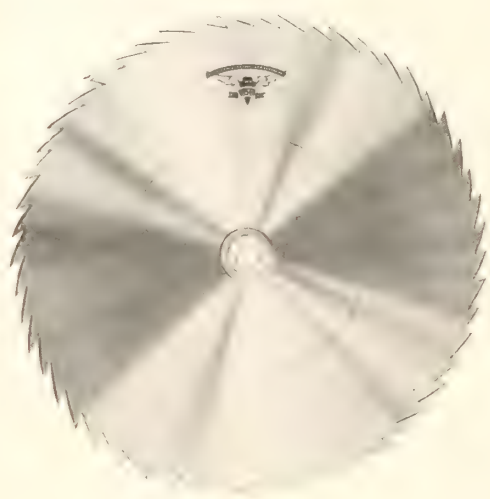
EXTRA POWER BELTING



PROTECTION—

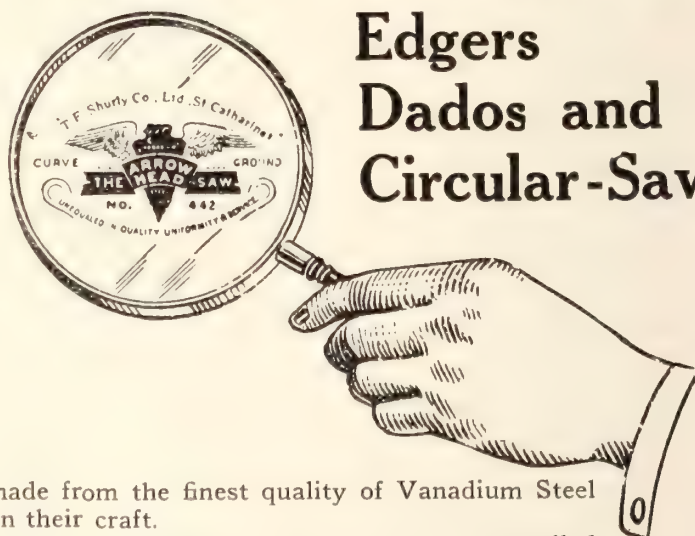
Safety First! How often have we heard or seen this phrase, yet daily, yes, and oftener, accidents are occurring. Silver's Round Safety Cylinder will protect the operators of any of our new jointers from needless injury. They are greatly appreciated by the operators of these machines and they help wonderfully to increase production. Write us for descriptive matter regarding our complete line of machinery that will interest you.

The Silver Mfg. Co. ^{Box 370} Salem, Ohio, U.S.A.



ARROW HEAD

Edgers
Dados and
Circular-Saws



"Arrow Head" products are made from the finest quality of Vanadium Steel and by workmen who are experts in their craft.

For the furniture factory or general wood-working plant they are unexcelled in the long service they render.

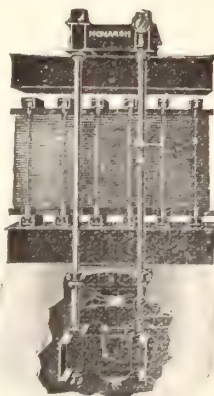
Why not equip your whole plant with "Arrow Head" saws and eliminate your saw troubles?

T. F. SHURLY CO., LIMITED

ST. CATHARINES

ONTARIO

Farquhar
Hydraulic
Machinery



Monarch Veneer Presses

Farquhar Hydraulic Veneer Presses have double steel head and base, and heavy steel strain rods. Cylinder, which is of steel with detachable saddle, can be repacked without removing the ram. Pump is quick acting, of rigid construction. A pressure of 100-lbs. to the square inch is applied to the veneering surface. Stock is handled by retainer system, unsurpassed both for efficiency and economy.

These presses are built to suit all requirements, liberal proportions with first quality material and workmanship throughout.

We make a specialty of Pumps, Accumulators, Etc. Also all kinds of special Hydraulic Presses and equipment to order. Write us concerning your requirements.

A. B. FARQUHAR CO., Limited, Box 171, York, Pa.

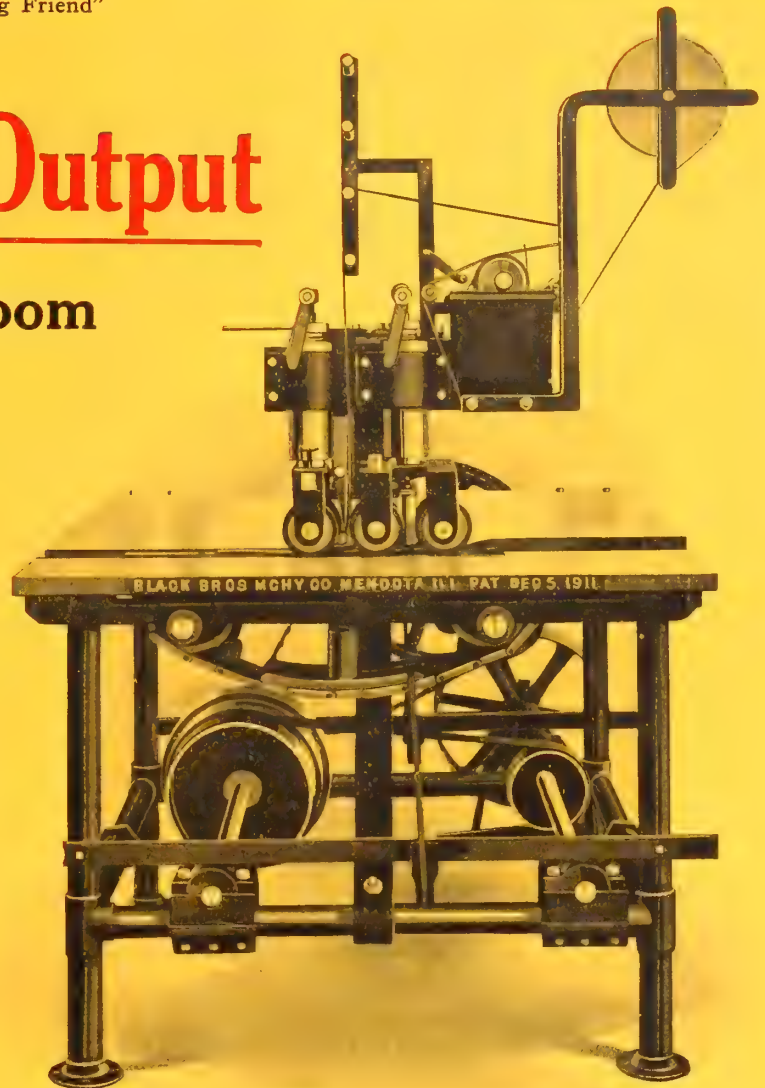
"Treat Your Machine as a Living Friend"

You can Double the Output

of Your Veneer Room
with a

"Black Bros." Veneer Taping Machine

To prove our claims
we will place one of
these machines with
you on trial---we know
it will back us up.



Increased Production is Essential

With the rising cost of labor and materials of all kinds it is essential that the furniture manufacturer rely more and more on modern machinery that will reduce his labor costs and increase his production. Both are accomplished with the "Black Bros." Veneer Taping Machine, for which we control the Canadian patents. This machine is the last word in efficiency and quantity production. It will handle with equal speed veneer of any thickness, using the ordinary gum tape or plain tape, putting on its own gum or glue as it is used. The simplicity of operation is also a feature that strongly commends it to your thorough investigation.

Built in two sizes—24" and 36"

We will gladly send full particulars and prices

The Preston Woodworking Machinery Co.
PRESTON, ONTARIO, CANADA
Limited

"Treat Your Machine as a Living Friend"

Have you investigated the Special Features of the "PRESTON" No. 132 36" BAND SAW?

Here are a few of them

All steel wheels, covered with solid rubber bands $\frac{1}{4}$ in. thick; perfect tension device and style of guide that combined reduce saw-breakage to a minimum; universal alignment of wheels; convenient adjustments; smooth, steady operation; supplied with 3 H.P. electric motor for individual drive and SKF ball bearings in upper and lower wheels when desired

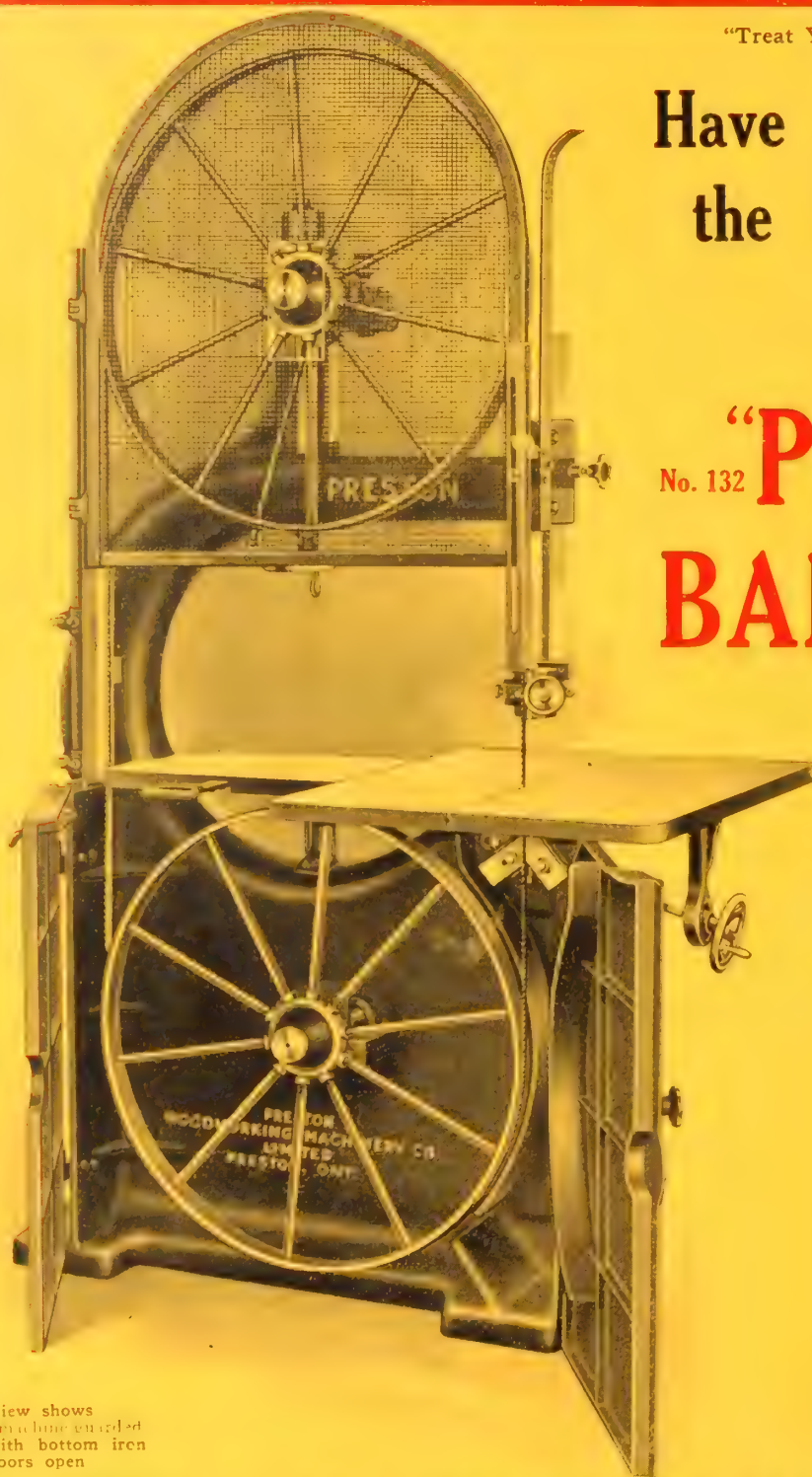
There are many others

IT'S A MACHINE TO BE PROUD OF

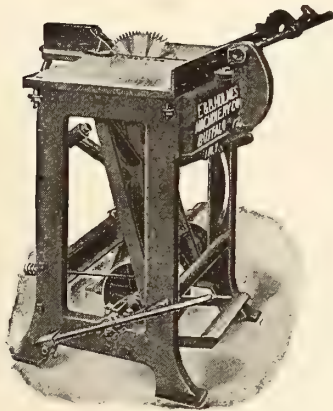
The many improvements that are found on the No. 132 Preston Band Saw really put it in a class all by itself. We feel quite confident that there is nothing on the market to-day that can equal it for steady performance. Every care has been taken in designing and building to make it all we claim and more. *Write for our descriptive pamphlet and prices*

The Preston Woodworking Machinery Co.
PRESTON, ONTARIO, CANADA Limited

View shows
machine enclosed
with bottom iron
doors open

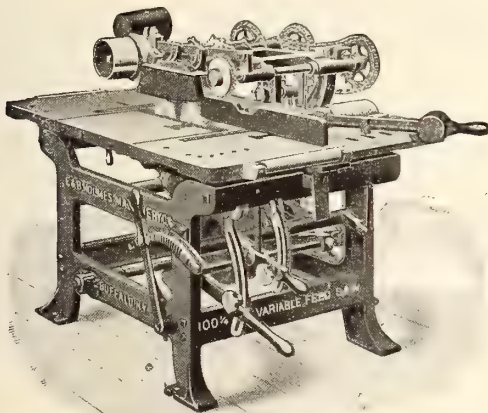


A Pair of Good Ones



LIGHTNING CUT-OFF SAW

This compact little machine is a marvel of efficiency. It is designed and operated so simply that the operator may use both hands for his work—a foot lever brings the saw forward, the saw is returned by a coil spring. Adjustable guards insure safety, and extra wooden tables may be attached to either side of the machine.



VARIABLE-FEED RIP SAW

This machine is a decided advantage to any wood-working plant where large quantities of ripping are done. It is compact in design and durably built. The variable speed of feeding is its main feature. This feed is capable of handling as much as 200 feet per minute, as well as lesser quantities as desired.

Write for complete catalogue

E. & B. Holmes Mach. Co.
47 Chicago Street
BUFFALO, N.Y.

Manufacturers of High Grade Furniture Pianos and Organs

always use

ALUMINIUM CAULS

for

Veneer Pressing

- ☐ One-third the weight of Zinc
- ☐ Retain the heat half as long again as Zinc
- ☐ Will not flatten out
- ☐ Easy to clean and handle
- ☐ Require to be prepared only once a week

Aluminium Sheet

for covering Kitchen Cabinets, Tables, Sink-shelves, and for lining Refrigerators

- ☐ Write for our Bulletin and Prices



The
British Aluminium Co.

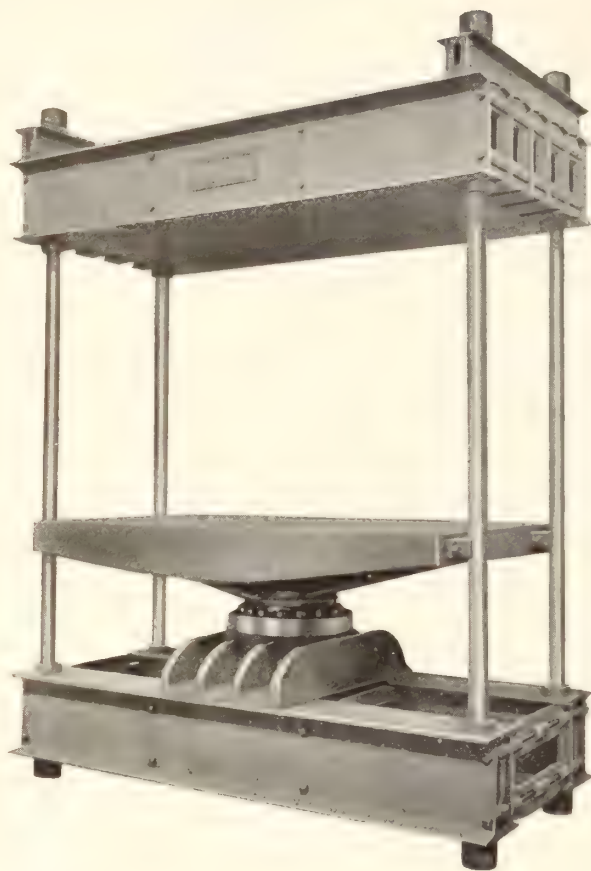
OF LONDON

265 Adelaide St. West

Limited

ENGLAND

Toronto



PRESSES

MADE IN CANADA

Hydraulic Veneer Press

Used for all classes of Veneer Work and built in all sizes.

We also manufacture
Power Screw and Filter Presses

WILLIAM R. PERRIN

Limited

TORONTO,

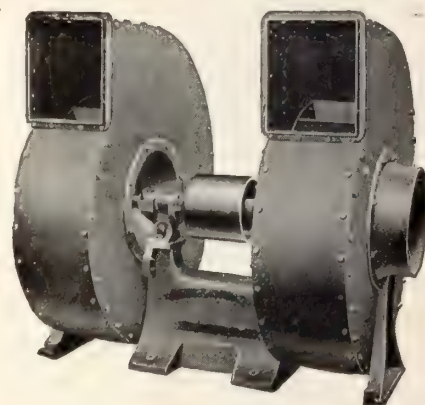
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ONTARIO

CANADIAN

Slow Speed Reversible MILL EXHAUSTERS

—are, from a standpoint of economy and efficiency, far superior. With a saving of from 15 to 25 per cent. in power they will assist greatly in reducing your manufacturing cost.



Carefully designed for handling shavings, and other stringy material, as well as bark, sawdust, gases, etc. We install complete shaving exhaust systems. It will not cost you anything nor entail an obligation for us to give you a price on revising your old system or installing a new one.

Write us for a copy of our catalog which explains fully the many good points of the Canadian Slow Speed Reversible Mill Exhausters.

**Canadian Blower & Forge
Co., Limited.**

KITCHENER,

-

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ONTARIO

Cut Your COSTS — C.M.C. —



As others do on our No. 611 straight edging and jointing machine

"RIGHT HERE IN CANADA"

This boy and girl are breaking out stock in one of the largest factories in Canada.

They are doing the work formerly done by three men and three boys.

They are doing it straighter and better.

They are saving the cost of a man's wages every day in stock.

They are doing it with a great saving in power.

They are working in comfort and safety.

This performance must necessarily be of great and pressing interest to every furniture manufacturer. Especially so, in view of the present ever mounting cost of labor.

CANADA MACHINERY CORPORATION, LIMITED, GALT, ONTARIO

Toronto Office and Warerooms:

Brock Avenue Subway



"Now We Can Stay at Our Benches and Produce"

Put a Wallace Bench Saw and a Wallace Bench Planer

out on the floors among the workmen who have cutting, fitting, trimming, assembling or jointing work to do. You immediately speed up production and cut costs in half, for you cut out 80% of your hand work and save 70% of those expensive, time-consuming trips to the stationary machines.

Write for catalogs—it will pay you.
Thousands of shops are already equipped.

J. D. Wallace & Co.

1414 West Jackson Blvd., CHICAGO, ILL.

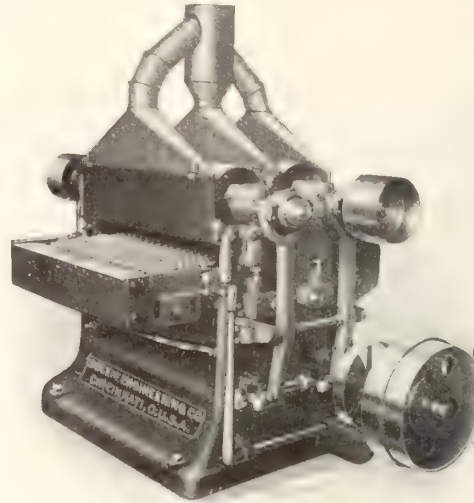
Canadian Representatives:

The Geo. F. Foss Machinery & Supply Company.
The A. R. Williams Machinery Company.

\$1200⁰⁰ to \$1500⁰⁰ Saving on Every Drum Sander

Simplicity of construction allows us to offer a 37" Endless Bed Drum Sander at far below the cost of the old type of machine.

It does more work and saves \$10.00 to \$20.00 in upkeep. Whether you need a sander now or not, write for our bulletin and get posted on this economical machine.



One cost saving part used on this machine can be bought separately and attached to any standard make of drum sander.

Solem Engineering Co.
SHEBOYGAN, WIS.. U. S. A.

Magazine Feed Produces Greater Results with a Saving of 85%

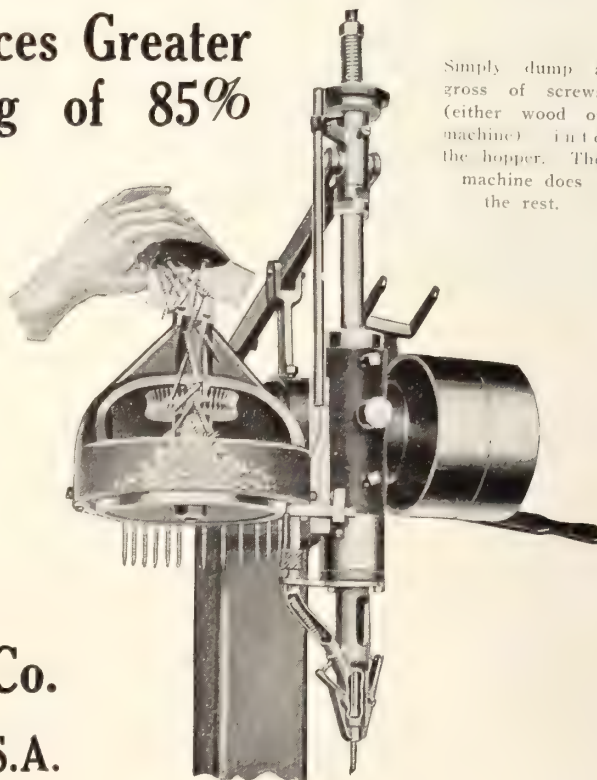
With a saving of about 85% of your labor cost in driving screws, or a saving of six out of every seven men, you can hardly afford to be without Automatic Magazine Fed Screw Driving Machines in your plant. Simple in construction, your newest hand may operate it after very little practice, yet most efficient in its operation, one man can drive as many screws with one machine as seven or eight men driving by hand. Working with wonderful speed and accuracy, or to be exact, an average of 1000 to 2000 ordinary screws may be perfectly magazine and driven in one hour.

Write today, giving outside dimensions of your work and gauge and length of screws used and we will send you descriptive literature and list of users.

The Reynolds Machine Co.

Department C

Massillon, Ohio - U.S.A.



Simply dump a gross of screws (either wood or machine) into the hopper. The machine does the rest.

Use
Robertson
 Patented Socket Head
Wood Screws
 in your furniture



Tens of thousands of dollars annually are being saved in the furniture, motor and other factories of Canada by the use of Robertson's Socket Screws. Its general use is inevitable because with it, workmen do double the work and do it neater. Many users are making the equivalent of a dividend for their concerns from the savings of time and increase of output in assembly work in factories.

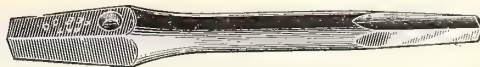
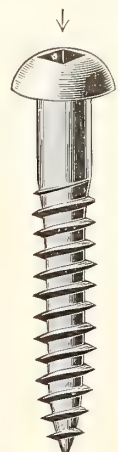
No trouble in the change over, we look after that and supply you with perfect drivers free for your men.

Don't listen to interested knockers: don't take our statement only; send for free sample packet and investigate for yourself; let your men try them. That is an easy and fair way to settle the question; you lose nothing, and stand to make hundreds or thousands of dollars annually.

See That
Square Hole?



See That
Square Hole?

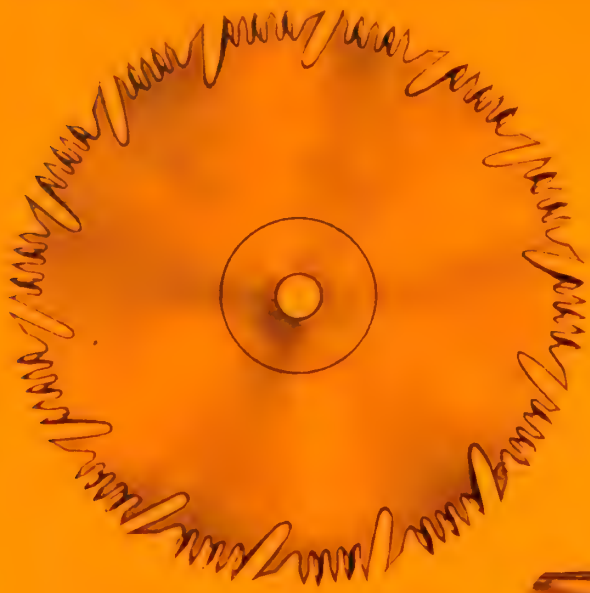


Drivers supplied FREE with first order.

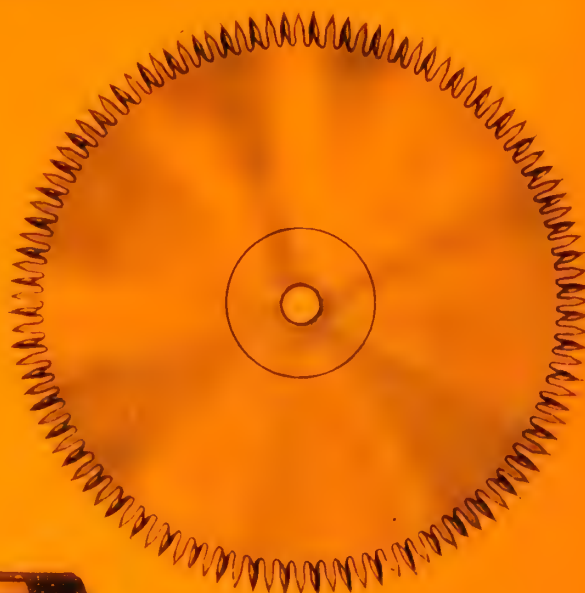
P. L. Robertson Mfg. Co., Ltd.
 Milton - Ontario

Radcliff Special Saws for Phonograph Case Manufacture

Having fitted up many plants to make Gramophone Cases, we have succeeded in turning out saws and cutters that will cut the various pieces clean and smooth. The mitres will be perfectly true and ready to glue straight from saw. We are prepared to give our customers the benefit of our great experience in this line.



Planer Saws for all trimming and smooth ripping



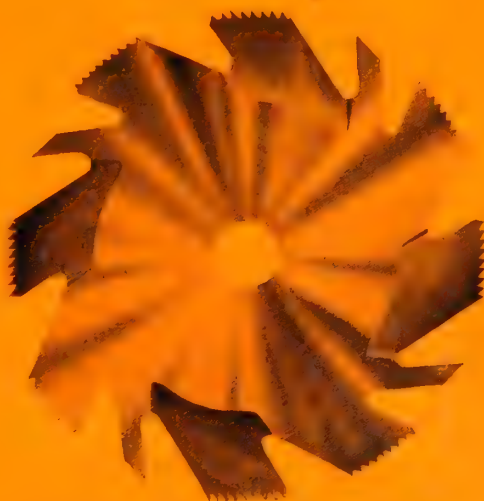
Mitre saw for Lid mitres

Special Spline Saws Supplied for Lid Spline



Two $\frac{3}{8}$ " Groover Saws used on shaper for lid hinges, also for panel groove in legs.

Legs Roughed Out on Band Saw—then Shaped Up with Shaper Knives



$\frac{1}{4}$ Bevel wing groover for shelf slots

Jig Saws for Scroll Work



Beaver Dado for hinge groove in legs

We also furnish Knives for all Planing and Jointing Operations

The Radcliff Saw Manufacturing Company, Limited
1550 Dundas Street West, Toronto, Ontario

Agents for L. & I. J. White Company Machine Knives

OAK

Plain and Quartered
Uniform Color—Soft Texture

Poplar, Ash and other Hardwoods

We have 35,000,000 feet dry stock—all of our own manufacture, from our own timber grown in Eastern Kentucky

Prompt Shipments

The Mowbray & Robinson Co.
(INCORPORATED)

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Office: CINCINNATI, OHIO

MILLS

Quicksand, Ky.; Viper, Ky.; West Irvine, Ky.

Canadian Representative :

M. E. CUMMINGS, 814 Richmond Ave., Buffalo. N. Y.



Nearly Half a Century of Growth

After nearly half a century of growth, this company represents probably the largest complete organization in the country devoted to the production, manufacture and distribution of

Mahogany Lumber and Veneers

Growth is the natural result of service, and now that we have co-ordinated all branches of the industry under one organization we are in a position to offer even more complete service than in the past.

Astoria Mahogany Co., Inc.

437 Madison Ave., New York

Successors to

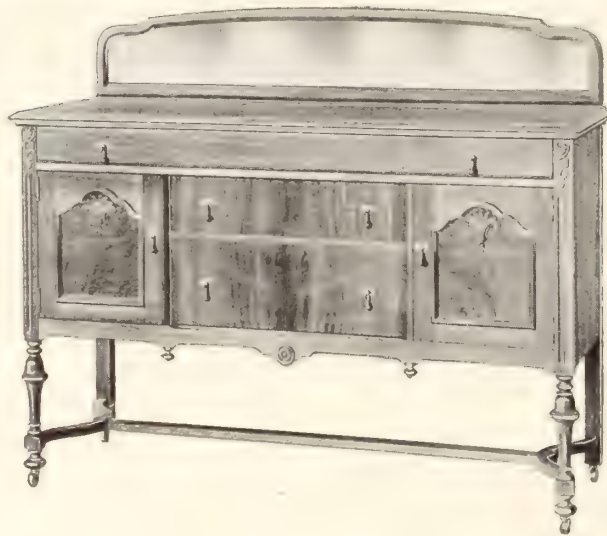
**Huddleston-Marsh Mahogany Co.
Astoria Veneer Mills and Dock Co.**

Mill and Yards, Long Island City, New York

BRANCHES :

44 North Market Avenue
Grand Rapids, Mich.

2256 Lumber Street
Chicago, Ill.



OUR REPUTATION

for quality Walnut has been established, and will be maintained, with the furniture manufacturers everywhere. They know that for quality service and beauty Hartzell's Walnut is yet unbeaten. For thirty-seven years we have been turning out

"Hartzell's Choice Walnut"

to meet the demands of the best of furniture manufacturers. We have studied the problems of Walnut production and have succeeded in making Walnut the most popular wood of the present day. Hartzell's Walnut is direct from the greatest Walnut territories of the United States—Ohio and Indiana.

Tell us what kind of stock you have been using, and in what grades. The chances are we can assist you materially.

We also have Veneers, Lumber, Dimension and Panels of the best quality.

Geo. W. Hartzell
PIQUA, OHIO

American Walnut

Our large supply of well selected logs makes it possible to produce and maintain an abundant stock of high grade walnut lumber.



A part of our log supply being cared for in a pond of water.
The picture shows surface of pond.

**All Grades and Thicknesses.
American Walnut Exclusively.**

Pickrel Walnut Company
St. Louis, Missouri

St. Francis Basins Hardwoods

Tennessee Aromatic Red Cedar

STOCK AVAILABLE FOR PROMPT SHIPMENT
DELIVERED PRICES CHEERFULLY FURNISHED

QUARTERED SAP GUM

4/4" Common & Better	100,000
6/4 " " "	50,000
8/4 " " "	4,000

PLAIN SAP GUM

3/4 Common & Better	2,000
4/4 Box Boards, 13/17"	100,000
4/4 " " 9/12"	25,000
4/4 1st & 2d 13/17"	100,000
4/4 1st & 2d—6" and wider	50,000
4/4 No. 2 and 3 Common	250,000
5/4 " " "	13,000
6/4 " " "	300,000

PLAIN RED GUM

4/4 1st and 2d	100,000
4/4 No. 1 Common	150,000
4/4 No. 2 Common	15,000
5/4 1st and 2d	5,000
6/4 " "	4,000
6/4 Common and Better	19,000
8/4 No. 2 & 3 Common	50,000

QUARTERED RED GUM

3/4 Common & Better	2,000
4/4 " " "	5,000
5/4 " " "	1,500
6/4 No. 1 Common & Better	35,000
8/4 " " "	75,000

FIGURED RED GUM

4/4 1st and 2d—Plain	20,000
4/4 No. 1 Common	35,000
5/4 " "	500
6/4 Common & Better	11,000
4/4 1st and 2d	15,000
4/4 No. 1 Common	15,000
8/4 1st and 2d	15,000
10/4 " "	11,000
12/4 " "	2,500

SOFT ELM

4/4 Log-run	50,000
5/4 " "	175,000
6/4 " "	50,000
8/4 " "	100,000
10/4 " "	30,000

PLAIN WHITE OAK

4/4" 1st and 2d	75,000
4/4 No. 1 Common	150,000
4/4 No. 2 Common	50,000
10/4 Common & Better	23,000
12/4 Common & Better	13,000

QUARTERED WHITE OAK

4/4 1st and 2d	20,000
4/4 No. 1 Common	50,000
4/4 No. 2 Common	8,000
6/4 Common & Better	5,000
4/4 Strips	10,000

PLAIN RED OAK

3/4 Common & Better	700
4/4 1st and 2d	10,000
4/4 No. 1 Common	50,000
4/4 No. 2 Common	35,000
8/4 No. 2 Common	5,000

QUARTERED RED OAK

4/4 Common & Better	50,000
---------------------	--------

MISCELLANEOUS OAK

4/4 Sound Wormy	15,000
4/4 No. 3 Common	200,000
5/4 No. 3 Common	7,000

MISCELLANEOUS

4/4 Log-run Pecan	7,000
6/4 No. 3 Pecan	50,000
8/4 & 10/4" No. 3 Pecan	3,000
4/4 6/4", 8/4" L/R Sycamore	2,500
5/4 & 6/4" No. 3 Ash	35,000
4/4 M. R. Locust	3,000
4/4 L/R Qrtd. Black Gum	22,000
4/4 L/R Pl. Black Gum	5,000

No. 3 COMMON ELM

4/4 No. 3 Common	100,000
5/4 " "	3,000
6/4 " "	75,000
8/4 " "	10,000
10/4 " "	5,000

Tennessee Aromatic Red Cedar in straight carlots or mixed with hardwoods.
Red Cedar Fence Posts carlots at attractive prices. Prompt,
courteous and efficient service at all times—Try us.

GEO. C. BROWN & COMPANY

Band Mills, Proctor, Ark. and Cosgrove, Ark. Main Office, Memphis, Tenn.

Canadian Representative: M. E. Cummings, 814 Richmond Ave., Buffalo, N. Y.

Your Approval



— will be merited by our stock of excellent grade and perfect condition. Cut from our large timber holdings and manufactured by modern process for your most exact requirements.

Your satisfaction is assured when making your selections from our stock. Your order will be filled exactly as you specify. Let us know your requirements. We will be pleased to add your name to our list of satisfied customers.



Memphis Bandmill Co.

Memphis, Tenn., U. S. A.

Are You Prepared "To Ride the Crest" of the Steadily Rising Tide of RED GUM Popularity?

Manufacturers of Desirable Grades of Furniture, those who have their fingers on the pulse of public taste, are rapidly *increasing* their lines of good

RED GUM

"Slow beginners" (known as the ultra-conservatives)—those who follow public taste at a safe distance behind—are *also* using a most unaccustomed quantity of **Red Gum**.

This is the final proof that "Red Gum has COME."

HOW IS YOUR LINE? ARE YOU "TO BAT" or on the bench, "waiting"?

The appropriate grades of **Red Gum**, "America's Finest Cabinet Wood," for good furniture (and trim), for every sort of use, are READY for PROMPT DELIVERY—and at prevailing prices are "the wisest buy for wise buyers" in the whole list of high-class furniture woods today.

Up-to-date architects and "interior landscape artists" are waking up and "giving their clients what they want"—i. e., **Red Gum**. (*ARE YOU?*) IT WILL PAY YOU TO RIDE THE TIDE.

WRITE US FOR ANY INFORMATION YOU WANT. WE'LL GIVE IT TO YOU RIGHT.

ADDRESS: RED GUM DIVISION,

AMERICAN HARDWOOD MANUFACTURERS' ASSOCIATION

1314 Chamber of Commerce Bldg.,

Memphis, Tenn.

AMERICAN WALNUT

for Quality Products



American walnut is the only cabinet wood in the world market today on which the manufacturer can get prompt shipments of dry stock in all grades and thicknesses, and at reasonable prices.

In addition to the above unusual considerations, American Walnut is in a class by itself when it comes to universal appreciation of its superiority.

*Write for our Walnut Booklet which will be out Soon
It is interesting - and costs you nothing.*

American Walnut Manufacturers' Association
Room 425, 115 Broadway, New York.



Band Mill and Yards, Memphis Plant

We manufacture all the lumber we ship and operate two band mills on our own timber, which enables us to ship stock of even grade, color, and texture.

We carry a large and well assorted stock of Southern Hardwoods at all times.

Gum Plain and Quartered Red
Ash, all thicknesses
Yellow Cypress
Oak Quartered White and Red
Sap Gum, Plain and Quartered
Oak Plain White and Red

We will cheerfully quote on your requirements.

"DIRECT FROM PRODUCER TO CONSUMER"

GAYOSO LUMBER COMPANY

Florida and Fay Avenue - - - - - MEMPHIS, TENNESSEE

Island Soft Fir

We specialize in furnishing factories sawn clears (kiln dried or green) and also have accumulations of lower grades, useful for crating, boxing, etc.

Timbers
Lumber
Shingles

Fir
Spruce
Cedar
Western

Hem-
lock

Douglas Fir (Oregon Pine) is the **strongest soft wood**. Our Island Soft Fir is an unusually close grained growth of great density and is used here for waggon tongues, whiffletrees, rack frames and for many other purposes to replace expensive hardwoods.

Your enquiries are invited and will be carefully dealt with.

McElroy Lumber Co., Ltd.

VANCOUVER, B. C.

Williams Lumber Company

*Manufacturers and
Wholesalers of*

Hardwood Lumber

Fayetteville Tennessee

Enquiries Solicited from Canada



*Send Us
Your
Enquiries*

Strength—Durability

Fir First—

More and more B.C. Fir is becoming the “versatile wood”—a wood of many uses. For manufacturers engaged in furniture and allied trades, Douglas Fir meets the demand for a close grain wood, with strength and durability combined.

Representing some of the largest mills on the Coast, we are ready to meet your requirements for all grades and sizes of B.C. Forest Products.

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Head Office

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PORTLAND, Oregon,
N.W. Bank Building

CHICAGO, Illinois,
McCormick Building



Car Material Railroad Stock Industrial Lumber

Catering to the unusual in
Size—Length—Quality—Quantity

Duncan Lumber Co. Ltd.

Manufacturers and Wholesalers

VANCOUVER

B. C.

B. C. FOREST PRODUCTS

Factory Stock Ready to Ship

40M. 4/4 x 4/12" Clear Red Cedar A.D.
20M. 8/4 x 4/20" Clear White Pine A.D.
55M. 4/4 x 4/12" Clear Larch A.D.
88M. 8/4 x 4/12" Clear Larch A.D.
200M. 8/4 x 6/12" Mill Run White Pine.

MOUNTAIN STOCK

COAST STOCKS

Rough Clear Fir

Kiln Dried, Air Dried
or Green

Is Douglas Fir playing a part in
your present day manufacturing?
In furniture and woodworking in-
dustries B. C. Fir is finding its
place.

We solicit your enquiries for Coast
Forest Products. Wire, our expense.

Allen-Stoltze Lumber Co., Limited

Vancouver, B. C.

Eastern Representative: R. G. CHESBRO, 1304 Bank of Hamilton Bldg.
TORONTO, ONT.

E. SONDHEIMER CO.

MEMPHIS, TENN., U.S.A.

Manufacturers and Wholesalers of

American Hardwoods

Specializing in RED GUM Lumber

We carry a very large and complete assortment of Plain-sawn and Quarter-sawn Sap-Gum, Plain-sawn and Quarter-sawn Red Gum, as well as Red Gum especially selected for Circassian Walnut Figure, in the various grades and thicknesses.

We also manufacture Oak, Ash, Cottonwood, Elm and Cypress, and make a specialty of Salix, a wood now very popular with the furniture and cabinet manufacturers.

Write or wire us for prices

Main distributing Yard and Office
McLean & Chelsea Ave., Memphis, Tenn. U.S.A.
Cable Address : "Sonderco"

We have Four Band Mills :
at Sondheimer, La., Tallulah, La.,
Ferriday, La., Baton Rouge, La.

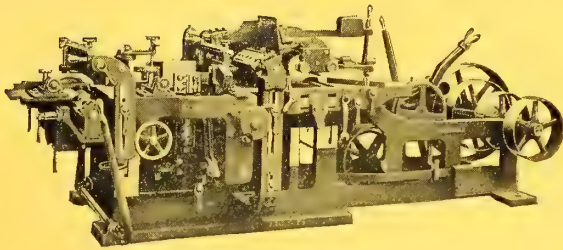
Boland Lumber Company

Murray Bldg., Grand Rapids, Mich.

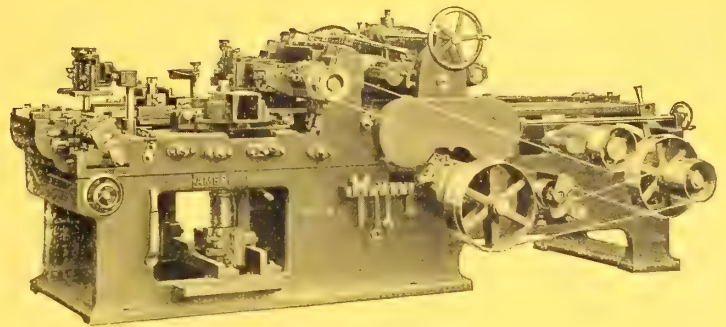
Manufacturers and Wholesalers of

Northern and Southern HARDWOODS

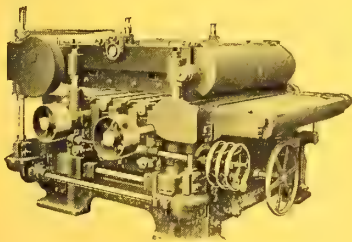
***Kindly send us your inquiries and
it will be a pleasure for us to quote
you and describe our lumber.***



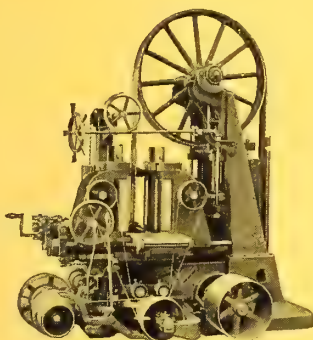
No. 505 Fast Feed Moulder



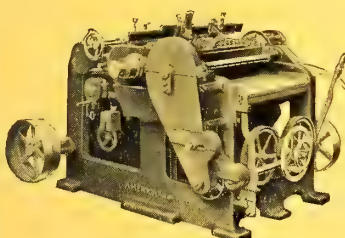
No. 34 Inside Moulder



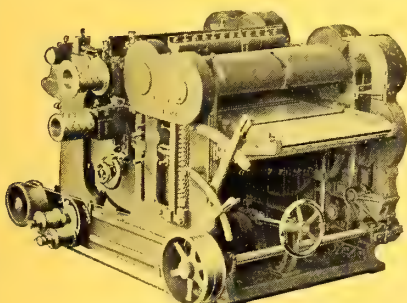
Endless Bed Sander



No. 111 Band Resaw



No. 666 Double Surfer



No. 49 Double Surfer

IF you want Woodworking Machines, or Complete Equipment for Furniture Factories, Panel Manufacturing, Planing Mills, Piano Factories, Phonograph Factories, Box Factories, Casket Factories, Etc.

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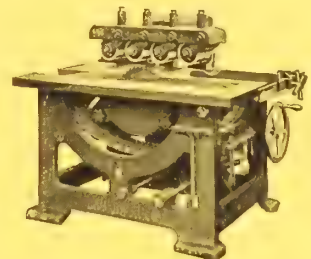
**Garlock-Walker
Machinery Co.**
LIMITED

32 Front Street West
TORONTO, Ontario

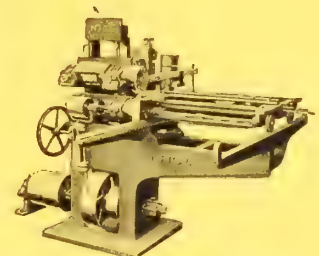
Toronto Montreal Winnipeg
Canadian Representatives

**American Woodworking
Machinery Co.**

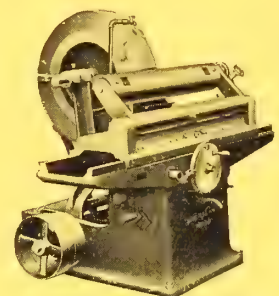
**Largest Manufacturers of
Woodworking Machinery
in the World**



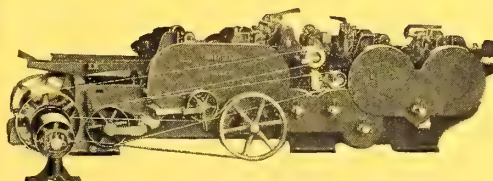
No. 25 Edging Saw



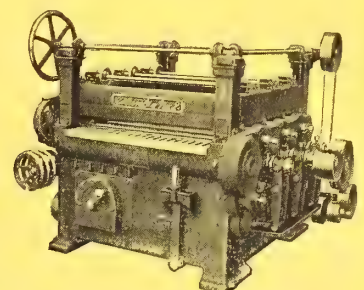
No. 2 1/2 Tenoner



No. 200 Knife Grinder



No. 229 Hardwood Matcher



No. 2 Columbia Sander

Pattern Shop Machinery seen at the American Foundrymen's Convention at Philadelphia



Canadian visitors at the Philadelphia Convention will remember the fine display of Pattern Shop Machines made by American Wood Working Machinery Co. of Rochester, N.Y.

We represent this Company and have always on hand a stock of their machines for immediate shipment. There are none better.

A New Catalog

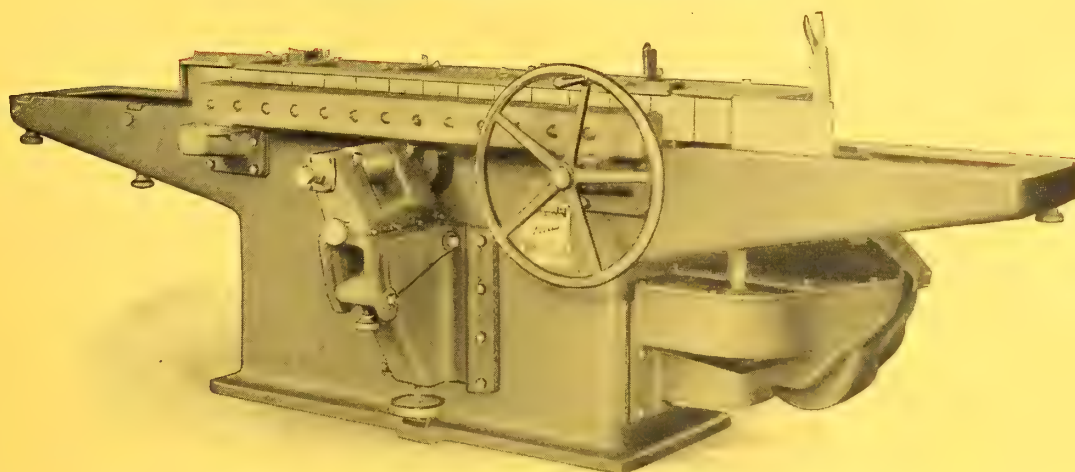
A catalog of Woodworking Machinery for the Pattern Shop has just been issued by the American Wood Working Machinery Co. A copy is yours for the asking.

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Jenkins-Falls 3-B Glue Jointer

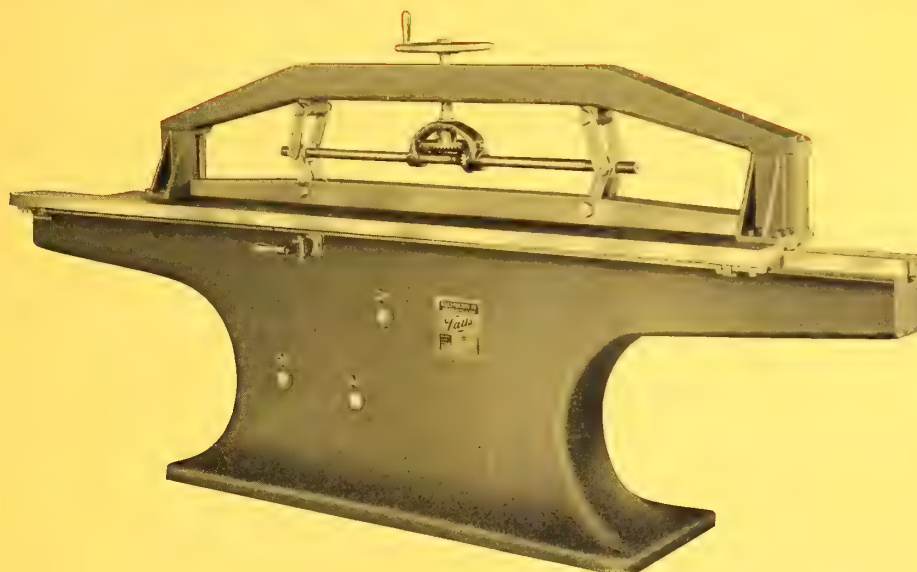
"THE PEER OF THEM ALL"



The last word in continuous feed glue jointers. For Perfect Glue Joints on Furniture and Pianos. For Moulding on Shelf Edges. Stair Nosing. Rolling Joints for Drop Leaves on Tables. For Squaring Stock and Tank Staves.

You should have particulars of this machine.

Jenkins-Falls No. 23 Veneer Jointer



The only Veneer Jointer that will effectively joint buckled veneer.

Stock is held flat by patented clamping device while the carriage travels past cutter and returns automatically according to length of stock worked.

Many Canadian manufacturers are buying this jointer. It will prove a cost-cutter in your veneer room.

WRITE FOR PARTICULARS.

The Jenkins Machine Company

(Successors to Hayes Machine Co. and Falls Machine Co.)

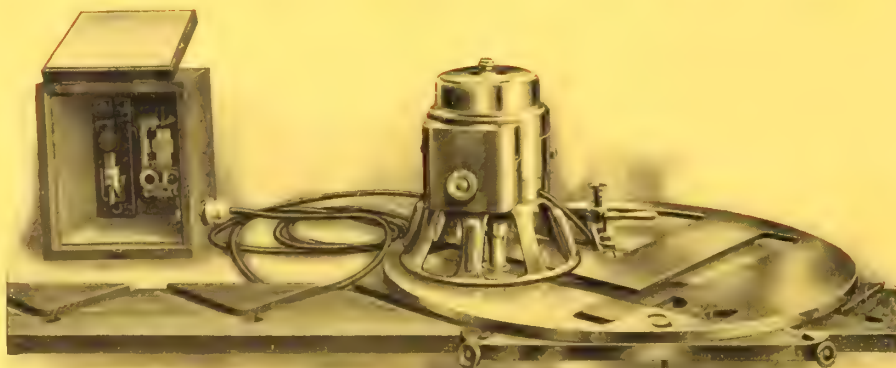
SHEBOYGAN FALLS, WIS., U. S. A.

Canadian Sales Agents

Garlock-Walker Machinery Company, Limited

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The KELLEY ROUTER



A Wood Cutter that Cuts Your Costs

Here are some of the things the Kelley Electric Router will do:

Stair routing, shelf housing, sunken panel work, newell posts, cabinet work, edge moulding, church pew ends, dovetailing, tank crozing, routing out for inlay work, column and pilaster fluting, crowning piano backs, cutting-in for ribs in piano backs.

The Kelley Router is a portable bench-operated machine.

The Kelley Router routs or cuts in a straight or curved line.

The Kelley Router is guided by a wood or metal pattern.

The cutter travels at 6500 r.p.m., making a perfect, smooth cut.

The Kelley Router has been on the market for fourteen years, and not one dissatisfied customer.

**WRITE FOR
PRICES
AND
FULL INFORMATION**

Tell us what your work is—we will tell you if the Router will do it, and send it on trial to prove it.

Kelley Electric Machine Company

111-119 Dearborn St., BUFFALO, N. Y.

Canadian Sales Agents

Garlock-Walker Machinery Company, Limited

32 Front St. West, TORONTO

TORONTO

MONTREAL

WINNIPEG

I O W A

BLACK WALNUT

NO cabinet wood responds as fully to the art of the furniture designer or the skill of the workman as American Black walnut. It meets every requirement.

Furniture of Walnut possesses a lasting charm and beauty that age does not destroy and the liberal use of this wood in furniture factories, guarantees the quality of their product.

Our customers assure us IOWA WALNUT is superior to all other varieties for its texture, grain and beautiful coloring. We can prove this by our first shipment.

Send us your list of Walnut requirements in lumber and veneers.

Des Moines Sawmill Co.
DES MOINES, IOWA



WHEN IN NEED

of Clear Pacific Coast Spruce or Fir

or

Gum, Sap and Red; Oak, Plain or Quartered

COME TO ME

I can supply fir in sizes from 2" to 4½" and lengths from 18' to 40' and spruce in sizes 1" to 4" and from 6' to 40' long.

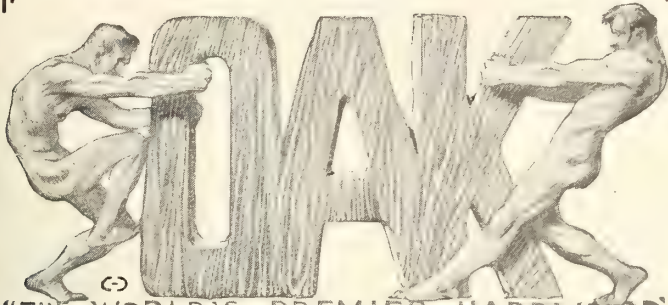
This is piled in Buffalo, N. Y., Detroit, Mich., and Dayton, Ohio. It should be of special interest to builders of fire ladders and graphophones and the furniture trade in general.

I have my own mill at Portville, N.Y., where I manufacture special Bill Oak, Railroad Material and Oak Ties.

FRANK T. SULLIVAN

MAIN OFFICE: 600 ELLICOTT SQUARE, BUFFALO, N. Y.
YARDS: DETROIT, MICH., BUFFALO, N. Y., AND DAYTON, O.
MILL. PORTVILLE, N. Y.

**"YES!" IS THE WORD FOR
AMERICAN OAK TODAY!**



"THE WORLD'S PREMIER HARDWOOD"

**to ALERT FURNITURE MAKERS:
"A WHISPER IS ENOUGH"**

From **FILING CABINETS** and other Office Furniture to "the bones of great ships"—OAK is **OAK**. (Supreme.)

From **DELICATELY CARVED FURNITURE** for the **DILETTANTE TASTE** to the sills and ribs of great structures whose nobility is in their sheer strength (and to the historic beams of Westminster Abbey) OAK is **OAK**. (Supreme.) **GOOD OAK FURNITURE** is **"COMING IN."**

Without a rival, without an apology, without a substitute, OAK is indeed

**"The WORLD'S
PREMIER HARDWOOD"**

(has been, is and ever shall be), AND EVERYBODY KNOWS IT.

Nature will never grow another wood as good as OAK for the uses for which it is historically appropriate.

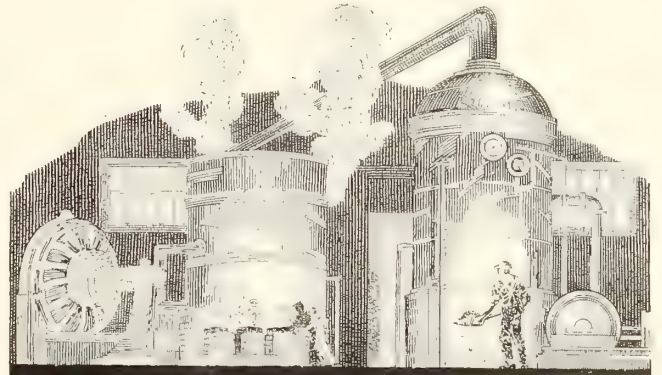
No need to mention Economy—you know it.

**AMERICAN OAK is PLENTIFUL,
ECONOMICAL, INDISPENSABLE.**

**ADMIRE IT. TRUST IT. INSIST ON IT.
SPECIFY IT. USE IT. WRITE us. TELL us.
ASK us. We will give you a Straight Personal Letter in
prompt reply—WITH ALL THE FACTS.**

Address: Oak Division,

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The Canadian Wood
Turpentine — made at
our mills at La Tuque, P.Q.
is an excellent diluent and
solvent and contains no
free rosin —

This Turpentine is made
by an improved laboratory
process from Canadian wood
and its distinctive odor clearly
indicates that it is a different
product from that given by the
older methods of distillation —

*Further information gladly
furnished upon request*



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Good Stocks, Prompt Shipments, Satisfaction

C. A. SPENCER, Limited

Wholesale Dealers in Rough and Dressed Lumber

Offices—500 McGill Building
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POPLAR GUM BIRCH

For prompt shipment we carry in stock large quantities of Rotary Cut, Sliced and Sawed Veneers and Southern Hardwood Lumber.

Send us your inquiries—our prices and service will insure future business.

Christmann Veneer & Lumber Co.

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Inc.

MANUFACTURERS and WHOLESALERS
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SOUTHERN HARDWOODS

Plain and Quartered Oak
Cypress, Gum, Ash
Soft Maple and Elm

Send us your inquiries

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Hardwoods

We can furnish you immediately Factory Stock including all grades and thicknesses of

Walnut, Chestnut
Mahogany, Teak, Oak
Ash, Cypress

ALSO

VENEERS

Oak, Maple, Walnut and
other Fancy Woods

The McLennan Lumber Co.

Limited

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American Hardwood Lumber Co.

St. Louis, Mo.

Large stock of—

**Dry Ash, Quartered Oak
Plain Oak and Gum**

Shipments from — NASHVILLE, Tenn.,
NEW ORLEANS, La., and BENTON, Ark.

Aromatic Tennessee Red Cedar

CAR LOAD LOTS
OR LESS

Earthman Lumber Co.
Murfreesboro, Tenn.

Indiana

Quartered Red and White

OAK

1,000,000 feet of dry stock carried
at all times

ALSO PLAIN OAK AND ASH

We manufacture all stock carried

Evansville Band Mill Co.

FRANK M. CUTSINGER, Pres.
GEO. H. FOOTE, Vice-Pres. & Treas.
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Mills at EVANSVILLE, Indiana

SPECIALS!

For Immediate Shipment

QUARTERED RED GUM

10 cars 2" 1s and 2s.
5 " 2½" Common and Better.
5 " 3" Common and Better.

PLAIN SAWED RED GUM

5 cars 2½" Common and Better.
5 " 3" Common and Better.
4 " 1½" 1s and 2s.
5 " 1" Common.
10 " 1¼" Common.

QUARTERED SAWED WHITE OAK

10 cars 1" No. 1 Common and Better.

**Thomas & Proetz Lumber
Company**

No. 3400 Hall St. St. Louis, Mo.

Perfection in Quality and Service

Service that is prompt and accurate is a big factor in our dealings and at the same time the acme of quality always prevails. We make a specialty of supplying Sap, Red Gum, Crating and Southern Hardwoods. Let us know your requirements in factory stock including all grades and thicknesses of Cypress, Sap, Red Tupelo and Black Gum, Cottonwood, Oak, Elm, Sycamore and Ash. We can ship immediately on receipt of your order.

Cornelius Lumber Company
ST. LOUIS, Mo., U. S. A.

ATTENTION:

"Auto Body and Furn. Manfgs."

We are one of the few firms
in the country handling

White Ash Exclusively

We sort it to meet all requirements. **Tough** texture and **Medium** texture. Can furnish **Special Widths** and **Lengths** one to four inches thick. Write or wire when needing WHITE ASH.

THOMPSON, KATZ LUMBER CO.

Memphis, Tenn.

Cable Address "TomKats"

Efficiency Marks Every Step of Our Service to You



Exact photograph of alley in our yard

White and Red Oak
Plain & Quarter Sawed
Red Gum

Our Specialty
Quarter Sawed
Red Gum in Plain
and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

BAND MILL AT LOUISE, MISS.

GREENFIELD, OHIO

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for
Quick Shipment

WHITE ASH				
	1 & 2	Clear	No. 1	No. 2
		Strips	Com.	Com.
1 in.		800	36,000	75,000
1 1/4 in.	69,000	17,500	1,000	
1 1/2 in.	33,300	5,200	51,000	26,100
2 in.	82,300	500	119,000	39,000
2 1/2 in.	6,500		2,000	1,500
3 in.	10,500		5,500	2,500
4 in.	1,500		300	500

BUTTERNUT				
	1 & 2	Clear	No. 1	No. 2
		Strips	Com.	Com.
1 in.	17,300		45,800	23,600
2 in.	8,100		17,000	10,000
2 1/2 in.	3,000		3,000	

CHERRY				
	1 & 2	Clear	No. 1	No. 2
		Strips	Com.	Com.
1 in.	177,000	8,000	139,200	61,500
1 1/4 in.	11,500		3,600	2,000
1 1/2 in.	41,000		31,700	70,300
2 in.	10,100		16,200	31,300
2 1/2 in.	2,500		1,100	1,200
3 in.	17,700		500	3,300
4 in.	9,300		2,200	1,600

CHESTNUT				
	1 & 2	Clear	S.W. & No. 1	No. 2
		Strips	Com.	Com.
1 in.			6,500	
1 1/4 in.	79,900		33,300	140,500
1 1/2 in.	125,800	1,800	58,200	155,200
2 in.	90,500		55,000	20,000
2 1/2 in.	28,200		65,200	107,200
3 in.	1,000		1,150	
3 1/2 in.	2,800		1,300	
4 in.	1,500		300	

PLAIN RED OAK				
	1 & 2	Clear	No. 1	No. 2
		Strips	Com.	Com.
3/4 in.		30,200		
3/4 in.	131,000		44,400	29,200
1 in.	10,500		87,000	48,600
1 1/4 in.	213,200		21,000	47,400
1 1/2 in.	107,700	2,400		13,200
1 3/4 in.	117,200	1,300	15,200	30,000
2 in.	53,100		81,800	12,000
2 1/2 in.	46,100		8,000	1,100
3 in.	28,800		12,500	3,000
4 in.	13,600		7,900	

PLAIN WHITE OAK				
	1 & 2	Clear	No. 1	No. 2
		Strips	Com.	Com.
3/4 in.		20,150		16,900
1 in.		80,200	115,000	28,000
1 1/4 in.	33,300		80,000	50,200
1 1/2 in.	73,300		10,000	8,000
1 3/4 in.	37,500		20,000	12,000
2 in.	21,000		60,000	23,000
2 1/2 in.	146,800		47,500	1,000
3 in.	75,800		45,800	4,100
3 1/2 in.	5,500		3,000	1,500
4 in.	60,000		13,500	18,000

QUARTERED RED OAK				
	1 & 2	Clear	No. 1	No. 2
		Strips	Com.	Com.
1 in.		300		1,700
1 1/4 in.	20,200	2,300		
1 1/2 in.	2,000			
2 in.	1,000		7,400	

QUARTERED WHITE OAK				
	1 & 2	Clear	No. 1	No. 2
		Strips	Com.	Com.
1 in.		5,500		
1 1/4 in.	39,500		40,600	3,000
1 1/2 in.				
1 3/4 in.	16,400		2,400	8,000
2 in.	17,000		3,400	1,300
2 1/2 in.	15,500		8,000	
3 in.	31,500		21,100	1,700
4 in.	1,000			

POPLAR				
	1 & 2	Clear	No. 1	No. 2
		Strips	Com.	Com.
18 in. & up				
1 in.	8,800	20,600		4,600
1 1/4 in.	1,200	15,000	10,600	24,200
1 1/2 in.	2,800	1,900		2,000
2 in.	4,300	300		12,000
2 1/2 in.		16,600		16,000
3 in.		25,800		28,000
4 in.		7,900		38,600
5 in.		6,000		6,300

POPLAR (Continued)				
	1 & 2	Clear	No. 1	No. 2
		Strips	Com.	Com.
1 in.		13,800		22,300
1 1/4 in.	32,600		56,900	97,300
1 1/2 in.	2,600		15,600	8,000
2 in.	13,700		32,000	
2 1/2 in.	7,000		141,500	27,500
3 in.	1,500		17,000	32,000
4 in.	700		750	

BLACK WALNUT				
	1 & 2	No. 1	No. 2	No. 3
		Com.	Com.	Com.
1 in.	700	21,000	23,100	1,000
1 1/4 in.	100	1,300	1,200	
1 1/2 in.	250	8,500	3,200	

Also Large Stock of BEECH, BIRCH and MAPLE

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto
MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y.

Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY

Crating Lumber for Furniture Manufacturers

100M. 5/8 x 3 and up
250M. 5/8 x 4 and up
80M. 1 x 2-4' Bundled
20M. 1 x 3-4'
200M. 1 x 3 and up

GOOD DRY STOCK FOR CRATING

Send your enquiries to

FRED T. SMITH, Limited

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Our Idea of Service

EXCESSIVE rains have retarded hardwood production. We are frank to admit that our stocks are broken from supplying the constantly growing demand of our customers. However, we are producing a fair volume of Ash, Elm, Hickory, Maple, Oak and Poplar with the aim of giving even better service than ever, if possible. And, as always, our customers **must** be satisfied.

If it happens that we can't help you in the above lines, we may be able to refer you to someone who can. Ask us.

John I. Shafer Hardwood Co.
SOUTH BEND INDIANA

H. W. Darby Hardwood Lumber Company

Manufacturers of

Hardwood Lumber

Red and Sap Gum a Specialty

Gum, Oak, Tupelo, Poplar
Ash, Elm, Cypress

Rooms 1531-33 Bank of Commerce & Trust Bldg
MEMPHIS, TENN.

Mills at :

Sidon, Miss Money, Miss.
Greenwood Miss.

HUNT, WASHINGTON & SMITH

Nashville, - Tennessee

Manufacturers of

Quartered and Plain White Oak

Poplar - Ash - Chestnut

Tennessee Red Cedar

Gum and Cypress

Canadian Representative

W. R. YOUMANS

Parkview Hotel

Toronto, Ontario

I offer the following West Virginia stock for immediate shipment :

100,000 Ft. 4/4 Sound Wormy Chestnut.
 100,000 " 5/4 " " "
 75,000 " 6/4 " " "
 70,000 " 8/4 " " "

No. 1 Common and Better Chestnut

100,000 Ft. 4/4
 100,000 " 6/4
 100,000 " 8/4 60% 14 and 16 feet long,
 50 to 60% 10" and wider.
 15,000 " 4/4 FAS Plain White Oak.
 75,000 " 4/4 No. 1 Com. Pln. Wh. Oak.
 100,000 " 6/4 No. 1 Com. Pln. Wh. Oak.

I have also a car of 4/4 No. 1 C & B Tennessee Red Cedar in transit.

I can make immediate shipment of Crating Lumber, Excelsior and Wood Wool.

Write, Wire or Phone for Prices.

PERCY E. HEENEY

202 Weber Chambers, KITCHENER, ONT.

Wayne Lumber Co.

Manufacturers & Wholesalers

MILLS : NEW YORK and CANADA

Basswood
 Beech
 Chestnut



Oak
 Poplar
 Ash

BIRCH AND MAPLE

OUR SPECIALTY

Get Our Prices on Box Lumber

110 West 40th St., New York City

Canadian Representative:

D. COTE,

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Walnut Lumber with Mahogany

Straight or Mixed Cars

WALNUT VENEERS

Plain---Striped---Figured---Circassian Effect

Let Us Know Your Requirements

The Kosse, Shoe & Schleyer Company

Eastern Branch
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325 Powers Theater Bldg.,
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Plain, Straight and Spiral Grooved



"Canada Wood" dowels are manufactured from high-grade Maple, Birch, Beech or White Oak, uniform in length and nicely pointed, quality guaranteed.

We also manufacture Bailwoods and Variety Turnings in all styles, sizes and descriptions, in the plain, or Enamelled in Black, Natural Wood or Mahogany finishes. Three-eighth in. Maple, Birch and Quarter Cut White Oak Flooring a Specialty. Broom and Mop Handles of every description.

Canada Wood Specialty Co.
Orillia, Ontario Limited

Sawmills at Zebra and Orillia, Ont.
Cable Address: "Special," Orillia, Can.

BLACK WALNUT

Large Stock ready for immediate shipment, also Well Assorted Stocks at our Yards and Mills

in West Virginia and Kentucky

OAK

Maple, Hickory, Chestnut
Basswood and Poplar

Prices and stock list on request

Burns & Knapp
Lumber Company
CONNEAUTVILLE, PA.

J. H. Bonner & Sons

Memphis, Tenn.

Mills:

Jonquil and Ruffwood, Ark.

Manufacturers

Band Sawn
**Hardwood
Lumber**

Write or wire for prices on
Gum, Oak, Elm, Etc.

Southern Hardwoods

Our mills now producing high grade stock, well manufactured, including

Poplar, Chestnut, Basswood
Buckeye, Hickory, Red and
Sap Gum, Plain and Quartered Red and White Oak.

Agricultural and other special purpose stock, Oak Planking, Railway Material, Heavy Timbers, in fact almost anything in the line of Hardwood Lumber.

Buskirk-Rutledge Lumber Co.
Cincinnati, Ohio.

Red Gum Sap Gum Oak Tupelo

We carry a well assorted stock ready for immediate shipment of all Southern Hardwoods. Make a specialty of loading mixed cars of various grades and thicknesses for the factory trade. We issue a monthly stock sheet showing at a glance delivered prices on everything we have ready for shipment. If you are not receiving these lists, please write us.

P. J. Lawrence Lumber Co.

Sales Office

Syndicate Trust Bldg. St. Louis, Mo., U.S.A.

Quality First-Service Always

Our lumber is second to none when it comes to high grade, good figure and texture and excellency in manufacture.

We offer the following items, thoroughly dry, on which we can make immediate shipment.

ASH		POPLAR	
10,000' 4/4" No. 1 Common		9,000' 4/4" Box Boards, 13-17"	
5,000' 6/4" No. 1 Common			
4,000' 6/4" No. 2 Common			
PLAIN WHITE OAK		QUARTERED SYCAMORE	
10,000' 4/4" 1s and 2s.		3,600' 4/4" 1s and 2s.	
		3,600' 4/4" 1s and 2s 12" and up.	
		7,500' 5/4" 1s and 2s.	
		4,000' 5/4" 1s and 2s 10" and up.	
QUARTERED RED OAK		11,000' 4/4" No. 1 Common.	
15,000' 4/4" 1s and 2s 10" and up.		51,000' 5/4" No. 1 Common.	
QUARTERED WHITE OAK		WALNUT	
9,000' 4/4" 1s and 2s 10" and up.		4,000' 5/8" 1s and 2s.	
4,000' 8/4" 1s and 2s.		4,000' 1 1/4" 1s and 2s 12" and up.	
10,000' 4/4" No. 1 Com. 10" & up.		2,000' 8/4" 1s and 2s.	
12,000' 5/4" No. 1 Common.		16,000' 5/8" No. 1 Common.	
8,000' 8/4" No. 1 Common.		2,000' 4/4" Selects.	
MIXED OAK		2,000' 8/4" Selects.	
7,500' 10 1/4" and 12 1/4" 1s and 2s.		60,000' 4/4" No. 2 Common.	
Plain Oak.		7,000' 5/4" No. 2 Common.	
10,000' 3 1/4" No. 1 Common and		5,000' 6/4" No. 2 Common.	
Better Plain Oak.			
16,200' 10/4" and 12/4" No. 1		7,000' 2 1/4" and Thicker No. 1	
Com. and Btr. Wormy Oak.		Common and Better	

Send us your inquiries for Ash, Beech, Cottonwood, Elm, Gum, Hickory, Oak, Poplar, Sycamore, and Walnut.

J. V. Stimson & Co., Owensboro Ky.

When Dry Lumber Gets Scarce Remember !

Our dry-kiln is at your service—500,000 feet per month capacity and 10,000,000 feet of lumber from our own band-mills to draw upon.

James E. Stark & Co., Inc.
MEMPHIS, TENN.

Bone Dry

Right now dry lumber is scarce. Here's a list of dry stock ready for prompt shipment. Remember there's 30 years' experience back of every board.

- 1 car 5/8 FAS Plain Red Oak.
- 1 car 5/8 No. 1 Com. Plain Red Oak.
- 10 cars 4/4 No. 2 Com. and Btr. Plain Red Oak.
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- 1 car 5/4 No. 1 Com. Plain Red Oak.
- 2 cars 6/4 FAS Plain Red Oak.
- 2 cars 6/4 No. 1 Com. Plain Red Oak.
- 1 car 8/4 FAS Plain Red Oak.
- 1 car 8/4 No. 1 Com. Plain Red Oak.
- 3 cars 10/4 FAS Plain Red Oak.
- 1 car 10/4 No. 1 Com. Plain Red Oak.

*Write for our Complete List
with Prices*

North Vernon Lumber Co.
NORTH VERNON, IND.
LOUISVILLE, KY. DYERSBURG, TENN.
Every Board Branded "NVLCO." Quality Guaranteed

Felger Lumber and Timber Company

MANUFACTURERS AND WHOLESALERS

NORTHERN AND SOUTHERN HARDWOODS

Main Office:
GRAND RAPIDS
733 Mich. Trust Bldg.

Southern Office:
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"NOTICE"

Furniture Manufacturers You Need Us and We Need You

We are among the old line lumber manufacturers, manufacturing lumber from the forest to the car and with our many years experience in timber buying, economical managing, etc., we give our trade the very best results.

We cater to, and make specialties for the furniture trade in hardwoods such as Beech, Gum and Maple of special patterns in the following:

Drawer Sides	Back Panel Rails	Common Stock
Drawer Backs	Stiles	for Furniture
Pilaster Stocks	Mullions	Backs

This material can be shipped in straight or mixed cars with lumber.

Let us figure with you on a trial order and have your name on our mailing list.

OSGOOD LUMBER COMPANY
OSGOOD, INDIANA

Manufacturers of band sawed hardwood and furniture parts of all kinds.

The Hyde Lumber Co.

Band Mills: LAKE PROVIDENCE LA.

Southern Office: MEMPHIS, TENN.

Bank of Commerce Bldg.

Northern Office: SOUTH BEND, IND.

MANUFACTURERS

Plain Red Gum

Quartered Red Gum

Plain Sap Gum

Quartered Sap Gum

Cottonwood, Cypress

Tupelo, Ash, Elm, Oak

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Canadian Representative

STEELE & HIBBARD LUMBER CO.

St. Louis, Mo.

52 Years in Business

Five Million Feet Dry Hardwoods
25 Different Kinds,
QUICK SHIPMENT

F. Huntington Smith
Canadian Representative.

Let Us Have Your Inquiries For

GUM

WE SPECIALIZE in PLAIN and QUARTERED
RED GUM

Write or wire for prices

I. B. WILCOX & CO.

Mills: Burdette, Miss.

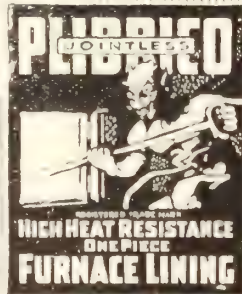
Sales Office: Louisville, Ky.

Increase Your Boiler Efficiency

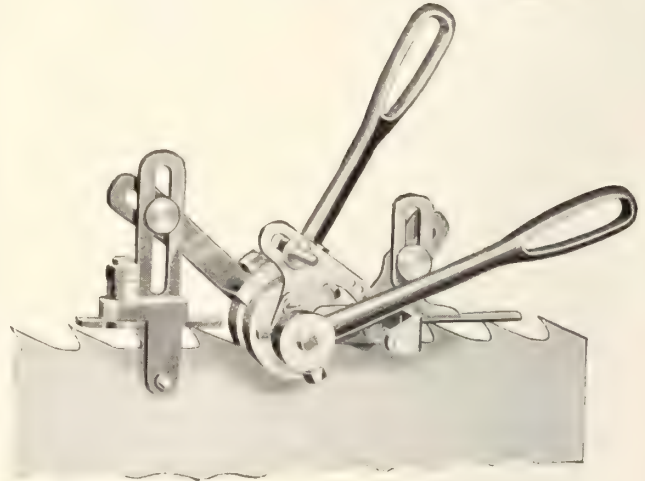
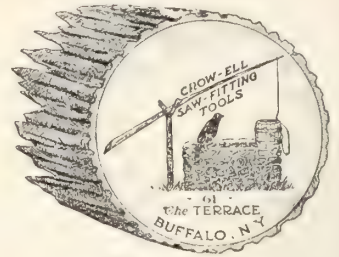
PLIBRICO is a plastic substance that makes a solid one-piece Lining without Joints by your own men for your Steam Boilers, Wood-Burners, Kilns, Dutch-Ovens, &c. Will outwear any fire-brick made and does away with Fire Clay.

Mill Supply Dept.
BEVERIDGE PAPER
Co., Limited
Montreal and St. John, N.B.

Agents
Coast to Coast



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our Illus-
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Crowell's The Saw-Fitting Tools of 100% Results

Better results from your saws and greater efficiency in your plant will be the result of using "Crowell" Saw-Fitting Tools. The simplicity of the "Crowell" Swage and Shaper marks it as an ideal appliance for use where results are an absolute necessity. Prompt and efficient in operation—you'll find them a great saving in time, labor and money by keeping your saws in perfect condition.

D. J. Crowell
61 TERRACE
Buffalo - N.Y., U.S.A.

The Largest Table Company
In The World

The Imperial Furniture Co.
Grand Rapids

are replacing their Dry Kilns
by a battery of up-to-date

GRAND RAPIDS VAPOR KILNS

Grand Rapids Veneer Works
Grand Rapids, Mich. Seattle, Wash.

Carborundum Brand Garnet Products in the World's Largest Chair Town



IN Gardner, Mass., the first chairs were manufactured way back in 1805—years and years before the present days of improved machines and Carborundum Brand Garnet Products. It wasn't so easy in those early days to turn out chairs such as they now make in Gardner.

There are twenty plants in this busy little town employing 4,000 men.

And in many of these plants they are using Carborundum Brand Garnet Paper and Cloth for every sanding operation from the rougher work on the drum sander to the fine finishing work in the white.

*They find Carborundum Brand Garnet Products
satisfactory or they wouldn't use them*

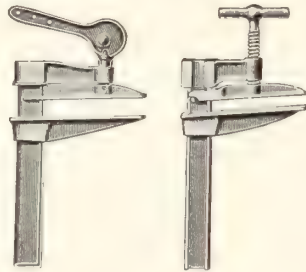
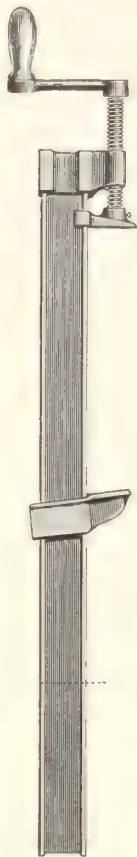
Carborundum Garnet Products Make Good Sanders Better Sanders

The Carborundum Company
Niagara Falls, N. Y.

New York	Chicago	Boston	Philadelphia	Detroit
Cleveland	Grand Rapids	Cincinnati		
Milwaukee	Pittsburgh			



Colt's Clamps for the Woodworker



Colt's Universal and Vise Clamps are unsurpassed for the Furniture Manufacturer and General Woodworker. They are made right, both in design and quality of materials and workmanship.

Colt's Clamps are quick-acting and have broad jaw clamping surface.

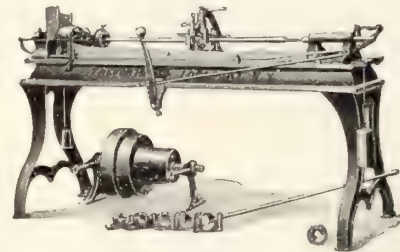
For further information write for Catalogue No. 294.

Batavia Clamp Co.

235 Centre St.

BATAVIA, N. Y.

THE TREVOR GAUGE LATHE



for Chair Posts, Handles, etc.

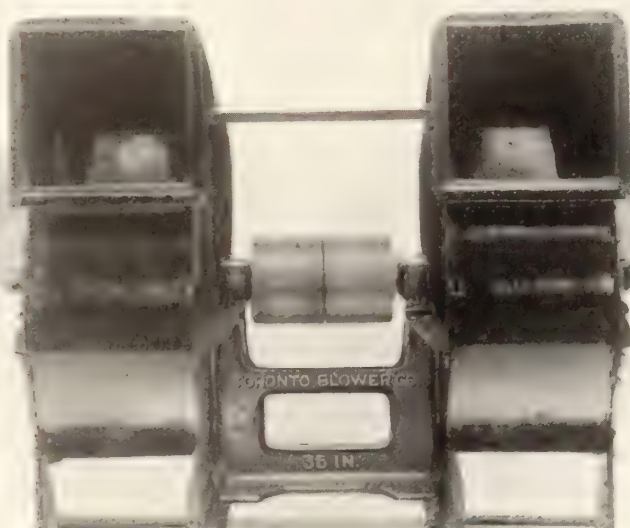
This efficient and capable machine is just what you have been looking for. It is specially designed for turning all kinds of round pieces needed in the manufacture of furniture and woodenware.

A complete description is contained in our catalogue. Write for it.

Trevor Manufacturing Co.
LOCKPORT, N.Y.

Builders of Stave, Heading and Woodturning Machinery

"Foster Fans" the Efficient Discharge System

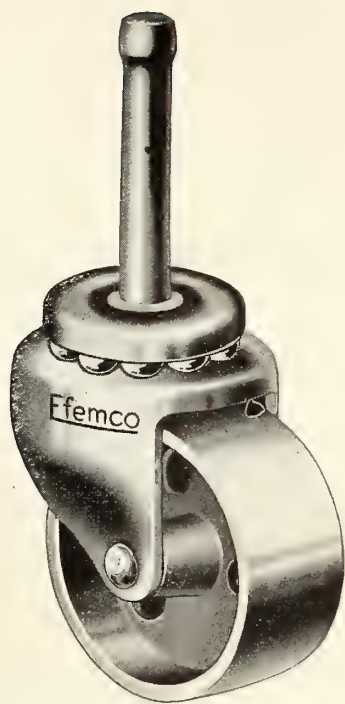


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The accompanying cut illustrates 35 in. double bypass exhaust fan equipped with four special ball bearings, shaft extending through with bearings on inlet side thereby eliminating the overhung wheels.

We manufacture Blowers and Blower Systems complete and supply capable and efficient mechanics to install them most scientifically, and will send an expert engineer of extended experience to estimate of cost of installation of Exhaust Systems.

Toronto Blower Co.
156 Duke St., TORONTO, Ont.



An **Efemco**
Product

QUICK SALES

This Acme Ball Bearing Caster is one of the best selling items in the Efemco Line. Made with every regard for good looks and staunch durability, it perfectly meets the requirements of furniture makers and all caster users.

To examine this caster is to buy it. To use it is to continue to use it. Its ball bearing action is lastingly dependable and it always rolls and swivels easily. Thoroughly maintains Foster, Merriam standards, so well established during 84 years of manufacturing experience.

Sizes three, four, five, six, seven and eight. Send for our catalog and "Special" Folder showing our new lines of improved Efemco Casters.

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Grip Neck Casters
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Truck Casters
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Automobile Accessories

Piston Rings
Cast Aluminum Ware
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Standardized by
84 years of service

Efemco Products

Efemco Products



Fibre



Two Short Cuts to Profits

FIBRE CORD AND STAKES OF UNIFORM QUALITY have many features to commend them to the manufacturer of fibre furniture. Our cord and stakes of high grade sulphite stock give wearing qualities that are unsurpassed and add a distinctive appearance to your finished product. Just try them and you will see the difference between our standard quality and others.

UNAFLEX SEAMING CORD is now used by many manufacturers of high grade upholstered furniture. Its uniform size and quality at once appeal to the workmen, and its lasting service will give the customer longer wear and greater satisfaction. Unaflex Seaming Cord is right, both in quality and price. Made in sizes from 3/32" to 16/32" on 50 lb. reels.

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Grand Rapids, Michigan

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Electric Glue Heaters

Fireless Cooker construction holds glue at correct working temperatures without guess work.

Operates on less current than any other electric glue heater.

CLEAN — SAFE — ECONOMICAL

International Heaters are portable—fit any lamp socket. Three heats—high, medium and low. Rapid melting, uniform temperature control. No skin, scum or dirt. No burnt glue.

Built in sizes for all classes of shops—from one pint to fifty gallons. Heavy spun copper construction. No seams or soldered joints. Dry heat. No water bath.

Follow the example of prominent concerns everywhere—specify "International" on your next order. Write for booklet—"Correct Temperature in the Glue Room."

"International Electric Heaters are the Best"



INTERNATIONAL ELECTRIC COMPANY
MANUFACTURERS
ELECTRICAL HEATING APPLIANCES

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Canadian Distributors

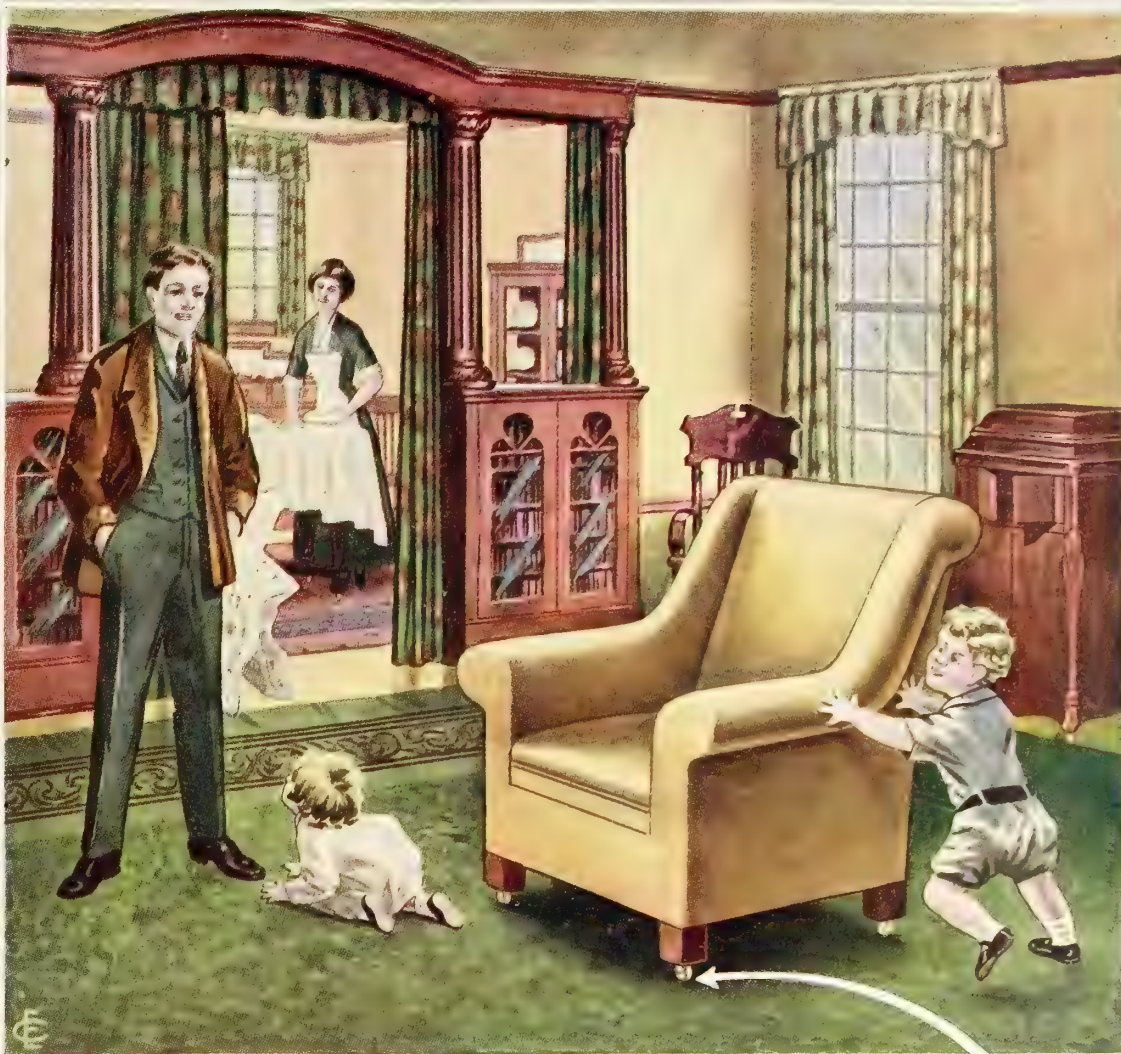
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FAULTLESS CASTERS

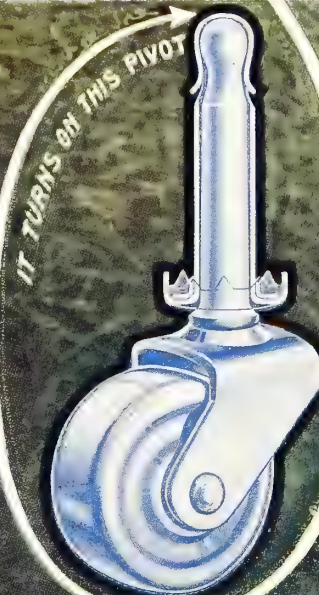
ARE ESSENTIAL TO THE FULL
ENJOYMENT OF GOOD FURNITURE

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FAULTLESS

“MOVE THE FAULTLESS WAY”

FAULTLESS CASTERS

Achieving Caster Quality— and Maintaining It

It is one thing to make good casters.
It is another thing to keep on making
them good—maintaining the uniformity
of quality which builds reputation.

Both of these factors are FAULT-
LESS achievements. They combine to
assure you of absolute reliability—and to
secure for us the repeat orders which
mean satisfied customers.

*Send for samples and prices from a Quality
Line that will please you.*

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Carrying a complete stock for YOUR
convenience.

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Manufacturers of

FAULTLESS Pivot Bearing and FAULTLESS Grip Neck Casters
with any kind and size of wheel—made with any finish.

“Move the FAULTLESS Way”

FAULTLESS

STUTZMAN ROUND SAFETY CYLINDER HEADS

**For Jointers, Buzz Planers, Moulders and Surfacers
The Knives Cut on Same Angle as Square Heads**

These heads are designed to meet the demand for cylinders small in diameter suited for Jointers or Pony Planers, where a well-balanced Round Safety Head is desired. They fill up the gap between the tables, so there is no danger to the operator. Very superior work is accomplished, too, aside from the safety feature.

The parts consist of the head and journal ends made in one piece, the ends of which are fitted with pulleys or one pulley, as required by the machine. The journals have a ground finish, insuring a smooth finish.

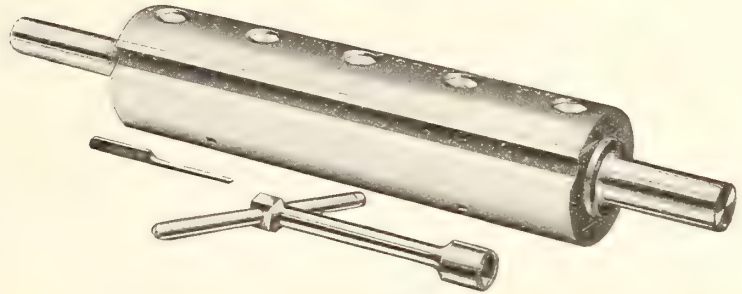
The knives are made of thin high-speed steel and clamped between self-centering caps.

The caps are drilled to admit a draft for setting the knives.

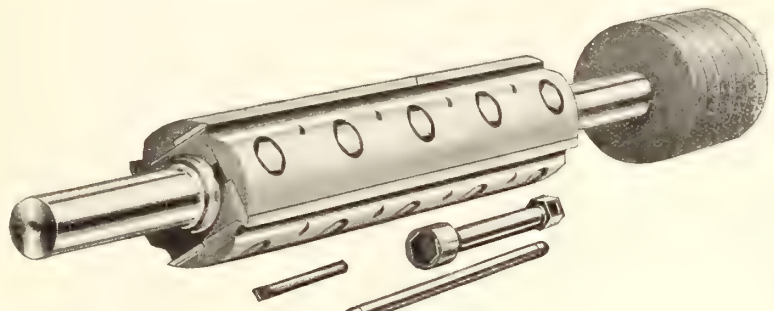
Knives are clamped from the heel of the cap to the front of knives, making it impossible for the chips to get under them.

Novelty knives can be attached to these two and four knife heads.

Gauge for setting knives, also wrench are furnished.



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PATENTED

Jointing Heads for Shapers

Shaper Guards

**Electric Grinders for Grinding Knives
without Removal from Machine**

ASK FOR CIRCULARS

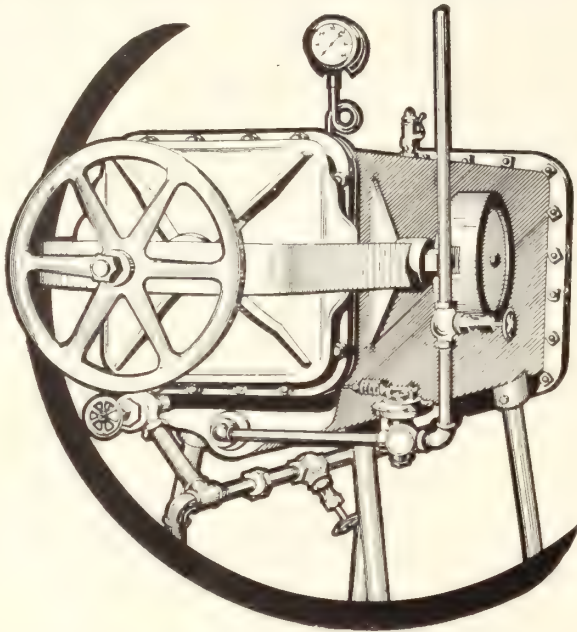
Fischer Manufacturing Company
Williamsport, Pennsylvania



Certificate of Approval Awarded by State of Pennsylvania

Gold Medal Awarded 1914,
New York City

Wood Steaming Retort



Wood Bending Manufacturers:

This is one of our

Perfection Retorts

which we guarantee will save you

50% Less Breakage

in your bending department than your present process; that your stock will dry in your forms or presses in one-third less time; that you will have no stained stock; that your stock will retain its shape much better after being bent; that it will dry in your dry-kiln in one-half less time and that your steam consumption will be reduced at least 90 per cent.

The door can be opened and closed in ten seconds, and it is steam and water tight and for this reason can be placed anywhere in your factory.

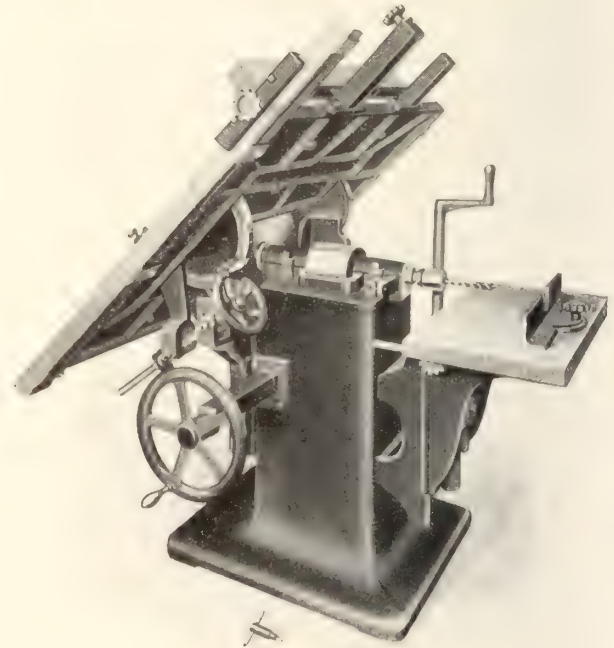
Compare this IMPROVED RETORT with your present steam boxes, then write us for our Booklet on Progressive Wood Steaming.

Made in Preston, Ontario

**Perfection Wood Steaming
Retort Co.**

PARKERSBURG - WEST VIRGINIA

An Excellent Machine for Furniture and Cabinet Work



The "Famous" No. 16 Variety Saw Bench with boring and mortising attachment will do much to increase your output in your furniture and cabinet shops. Accuracy is a main factor in its operation, while the roughest class of work is handled with the same degree of efficiency.

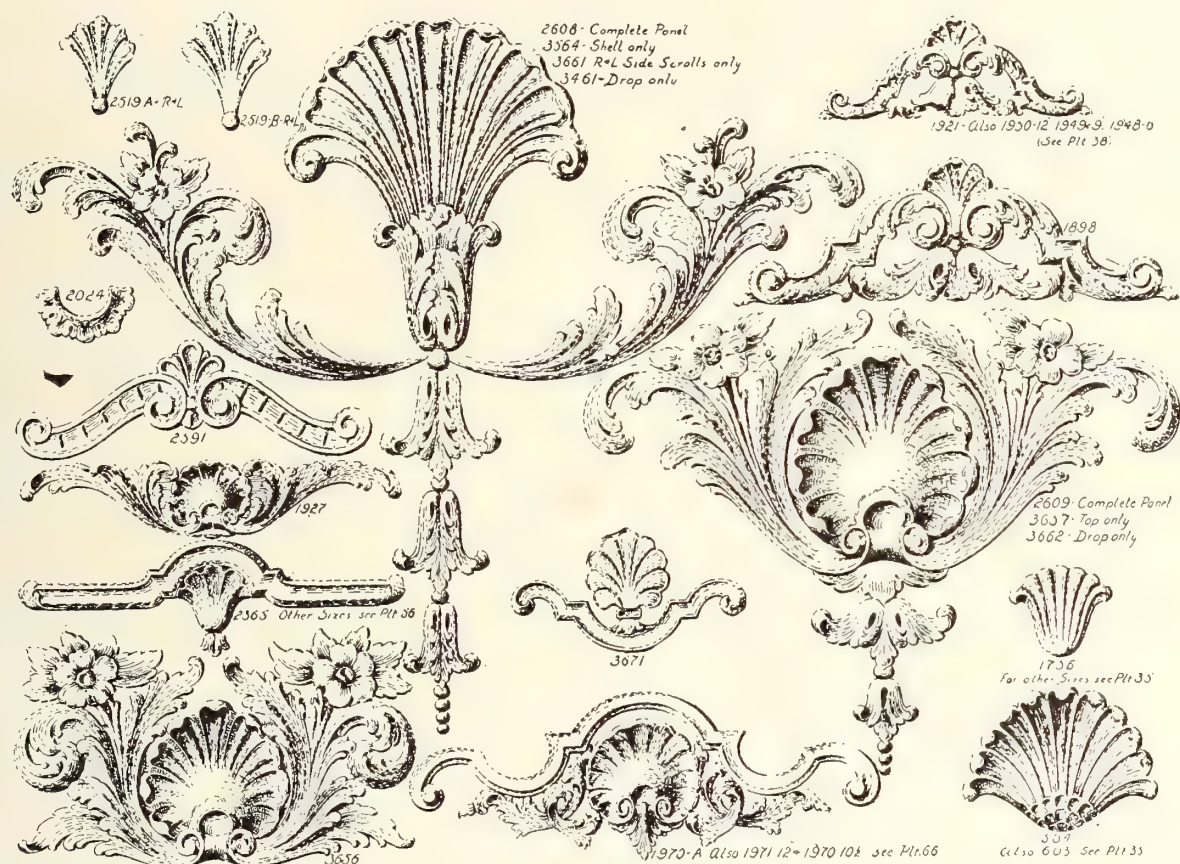
Write us for further information regarding the "Famous" No. 16 Variety Saw Bench and many other machines that you may need and are included in our complete line of woodworking machinery.

**The Sidney Machine
Tool Company**

SIDNEY, OHIO - - U. S. A.

Ontario Agent--H. W. Petrie, Ltd., Toronto

Period Carvings



Have you a copy of our New Catalogue? If Not, Why Not?

Wood Fibre Ornamentation

WE SOLICIT YOUR INQUIRIES

J. WALTER & SONS

KITCHENER

ONT.



Something New!
Something Better!!

**The Very Thing
Furniture Manufacturers
Have Been Looking for**

THE "STINE" SCREW HOLES

Not a passing fad, but a practical, long-needed invention that warrants the careful investigation of every furniture manufacturer. They take the place of the old fashioned method of using screws in a way that will give your product added value from the customer standpoint.

On the opposite page are a few reasons why they are worthy of careful consideration—read them.

We will gladly send samples for demonstration and prove their value to you.

THE ONLY SCREW HOLES IN THE WORLD



You drive the screw holes with a hammer in any material.

The screw holes are made for wood screws or machine screws to fit all sizes of screws. The head is removed and you leave a permanent screw hole.

The Stine Screw Holes Co.

Manufacturers

WATERBURY, CONN., U. S. A.

DEPARTMENT C. W.

*Once a Screw
Hole, Always
a Screw Hole*

*The Biggest
Little Thing
in the World*

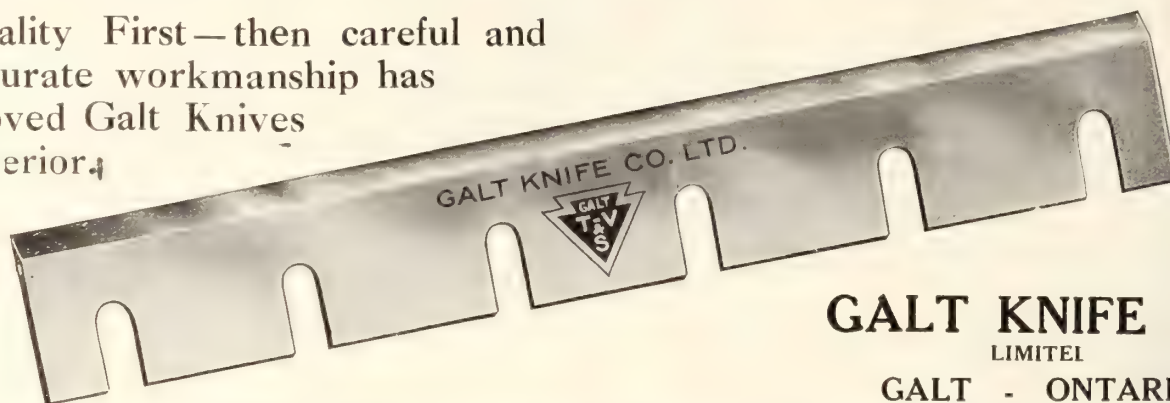
Some of the Reasons Why Screw Holes Will Be Bought and Used and Not Become Dead Stock for Anyone

- 1—They can be used without damage to receiving material.
- 2—They enable you to standardize to wood or machine screws in all material.
- 3—They are made of brass and will not rust under atmospheric or moisture conditions.
- 4—**ECONOMY**—They save more time value than the holes cost.
- 5—You get them for nothing and are paid for using them when you count time saved.
- 6—Screw holes have been needed ever since the first screw was used.
- 7—Special tools are **NOT** needed in using them in any material.
- 8—They can be used in any place a screw can be used.
- 9—By using screw holes, screws can be used in many places, and in many materials where it is impossible to use screws without them.
- 10—These are the only ready-made screw holes in the world.
- 11—No special screws are needed. These screw holes fit any wood screw or machine screw now in stock.
- 12—They make the neatest possible job in any material.
- 13—Every store where screws are sold must carry them in stock, because the line of screws is not complete without screw holes for them.
- 14—Every shop and factory where screws are used must also have these screw holes to fit the screws.
- 15—They are endorsed by all dealers in screws and by all users of screws.
- 16—Screw holes are entirely new and the world supply is yet to be furnished.
- 17—This is a progressive Old World of ours, and every active person in it must adopt all improved methods, and all new articles that will help him keep in the front line of progress.
- 18—Be among the first to stock up in screw holes if you are a dealer in screws.
- 19—Be among the first to install screw holes in your shop or factory, as you begin to save money soon as you use them.
- 20—In spite of the high cost of brass, screw holes are yet cheap.
- 21—We are letting the world know that screw holes can now be secured, by means of extensive advertising in all the principal Trade Journals that have the largest circulation among dealers in screws as well as users of screws.
- 22—Do not let your customer ask you for screw holes before you have them in stock. **BE A LIVE WIRE.**
- 23—They make everlasting holes in any material.
- 24—They mean "Plug-No-More" screw holes.
- 25—They are the result of Necessity being The Mother of Invention.
- 26—Anyone who can drive a nail can use screw holes.
- 27—Send for a sample and convince yourself.
- 28—Mechanics who see them say, "What do you think of that?"
- 29—In fact there are **NO REASONS** why screw holes should **NOT** be used.

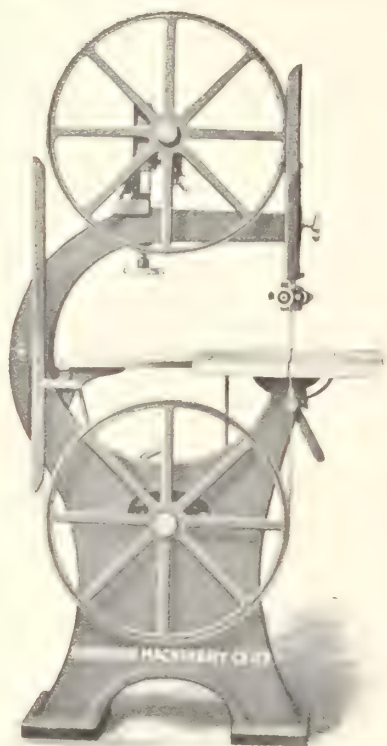
Each of these reasons are enough to sell Screw Holes. There are many other reasons.

Write at once for our handsome **Color Card** showing screw holes in various materials which will be sent on request, together with samples and price list.

Quality First—then careful and accurate workmanship has proved Galt Knives superior.



GALT KNIFE CO.
LIMITED
GALT - ONTARIO



"Dominion" 32

A NEW BALL BEARING BAND SAW

Self Aligning,
Smooth Running
Means
Less Attention,
Better Work
and More of It
Made with large
cored out frame,
long substantial
bearings, tilting
table, with quick
locking device. A
high grade machine
at a moderate
price. Lower
wheel is fitted
with guard (not
shown on cut).

Ask for Circular
giving full particulars.

DOMINION MACHINERY CO.
110 CHURCH STREET - TORONTO

THE ARMY, THE NAVY
and hundreds of your competitors are using

CASCO Waterproof Glue

More than a Million Pounds Used in
Aircraft During the War

If you are a manufacturer using hide
glue or any other adhesive, let us show
you how to use CASCO which is

STRONGER, CHEAPER, WATERPROOF

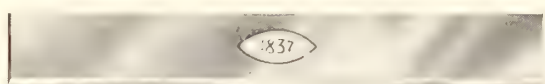
For laying veneer, for joints, for laying
tile or linoleum over cement, for all purposes
which require glue, and many
purposes for which ordinary glue cannot be used

SAMPLE ON REQUEST

MANUFACTURED BY

The Casein Manufacturing Co.
15 PARK ROW NEW YORK CITY

NOTE—Send for Casco Red Book. It contains much valuable technical information.



The Temper does the work

The ability of a knife to do its work depends upon its temper. For certain work you need a certain temper, but it is not so satisfactory for other operations. Our eighty-two years of experience have taught us much about tempering. One of the most important is that you should have your knives tempered for the work they are to perform.

"White" Knives cost less in the end. Try them once—we are willing to let you be the judge.

Canadian Representatives: Radcliff Saw Mfg. Co., Ltd., 1550 Dundas St. W., Toronto.

The L. & I. J. White Co., 25 Columbia St., Buffalo, N. Y.



Perkins Vegetable Glue

The Best is Always the Cheapest

Our Slogan is
ONE GRADE AND THAT THE BEST

PERKINS
183

Trade Mark

We have many customers on our books to whom we have sold glue continuously for ten years and some for twelve years.

Our business has made steady gain and October, 1919 shows the largest monthly sales in our history.

UNIFORM QUALITY SELLS GLUE

Process and Product Patents covering Perkins Glue were granted July 2nd and March 19th, 1912, and have been held valid and infringed by United States Circuit Court of Appeals. Corresponding Letters Patent Granted in Canada.

Perkins Glue Company

Factory & General Offices :
Lansdale, Pennsylvania

Sales Offices :
South Bend, Indiana

Vegetable Glue

Are you interested in this product for any class of work from the finest to the cheapest?

If so, we solicit your enquiries. We are making a line of these glues, all of which, for their specific purpose, are guaranteed to be the best and most economical product upon the market, EXCEPTING NONE. We are the oldest house in the United States specializing on VEGETABLE ADHESIVE PRODUCTS with a reputation of 40 years' continuous service.

**ABSOLUTELY STAINLESS VEGETABLE
GLUE FOR THE FINEST PIANO AND
CABINET WORK OUR SPECIALTY.**

We operate under our own patents and guarantee immunity and protection against all suits for infringement of any alleged Vegetable Glue Patent.

Do not be coerced into entering into long time contracts with parties claiming a monopoly of the right to make and use Vegetable Glues under the plea that you will be prosecuted if you do not use their product.

We will furnish references to parties using our product which will convince you that we have THE BEST PRODUCT ON THE MARKET FOR ANY AND EVERY CLASS OF WORK, and are amply responsible in the matter of carrying out our guarantees.

We are prepared to furnish all machinery required to apply our Vegetable Glues, and challenge practical tests to demonstrate the fact that our Glues are superior in adhesive and working qualities to any other Vegetable Glue on the market, and that we have

THE ONLY STAINLESS VEGETABLE GLUE

Can be supplied in dry or paste form as desired. Suitable for application either by spreader or brush

Are you interested in turning out perfect work in all lines at a lower cost than you can secure by the use of any other product? If so, write us to-day. Samples and demonstrations at our expense. We invite your correspondence.

VICTOR G. BLOEDE CO.
BALTIMORE, MD.

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**Manufacturers
West Virginia Hardwoods
Rough and Dressed**

**Mills: Skyles, W. Va.
Shipping Point: Erbacon, W. Va.**

**General Office :
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For Our
Products

Wm. Harris
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We Guarantee
Imperial Genuine
 AS THE
Highest Grade
 OF
Babbitt Metal

IT IS SPECIALLY BUILT FOR
 HIGH SPEED AND HARD WORK

Harris Heavy
Pressure Babbitt

WILL GIVE

Excellent Service on all
General Bearings in
Woodworking Machinery

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Will Eliminate Your Excess Trucking Costs

Tranco Trucks will enable you to dispense with four out of every five of your truckers if you are still using the old fashioned system of trucking. The ease of locomotion and operation and the ability to operate Tranco Trucks with steering head and handle at any angle when lifting and lowering the load will save hours in your daily trucking operation.

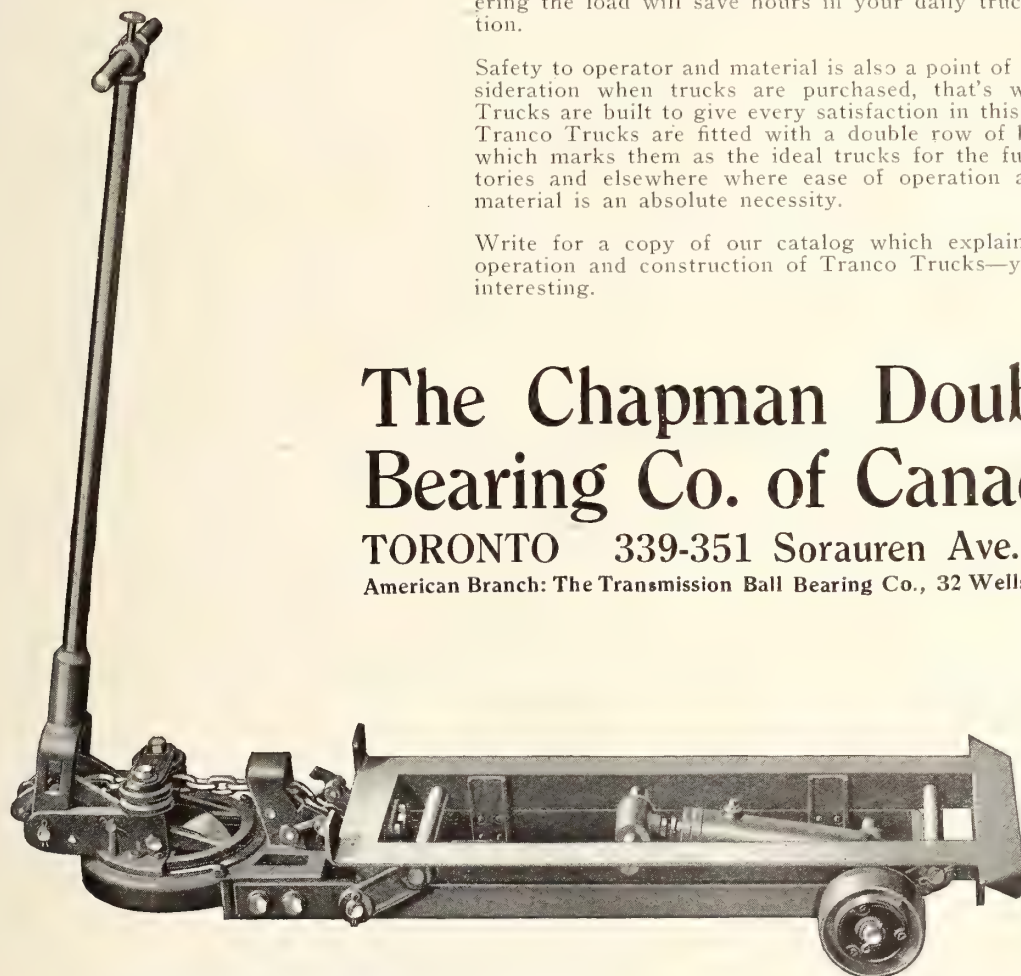
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ALL STEEL AUTOMATIC SWING SAW GUAGE.
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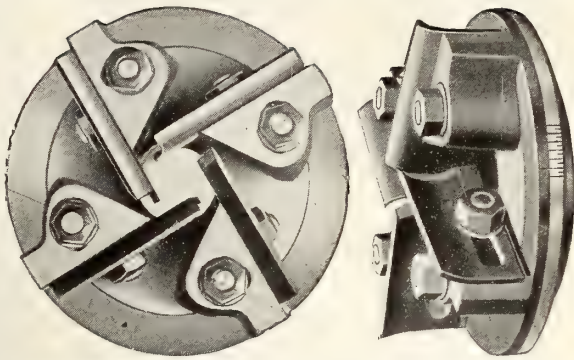
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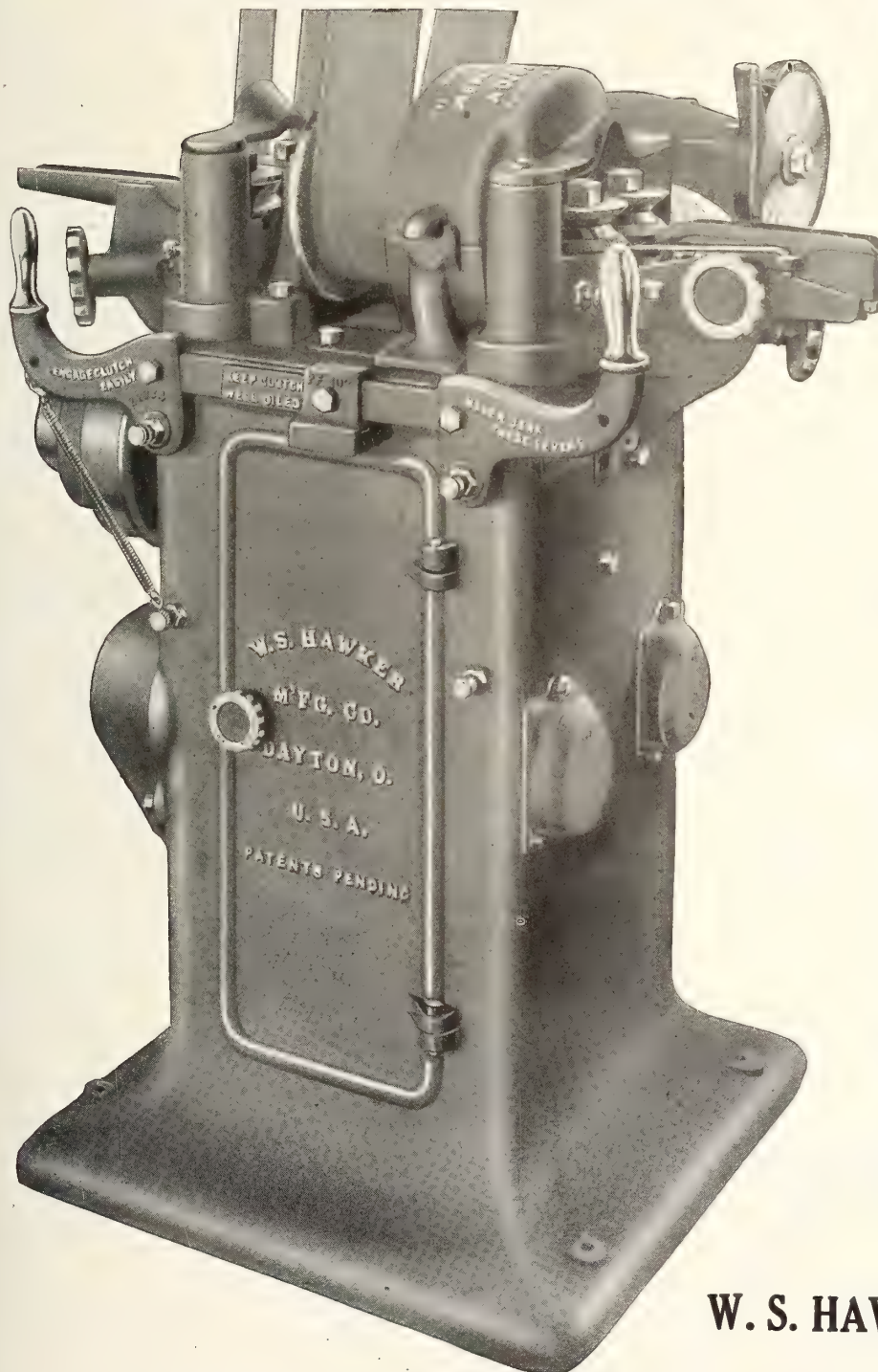


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The Problems of 1920

THE Annual Furniture Number of the "Canadian Woodworker and Furniture Manufacturer" is, this year, issued at a very opportune time, its advent marking the end of the first year of peace. The season which is closing has been marked by a spirit of co-operation among the individual manufacturers. They have realized that the problems of one are the problems of the industry as a whole and can best be met by the concerted action of all interested, working toward the same end. The result has been that the Furniture Manufacturers' Association has in a great measure been able to do the work for which it was organized. The benefits of this unity of purpose will be felt to a greater degree during the months to come.

For the furniture manufacturer this has been an eventful year. He has been faced with many difficulties and vexatious problems. In spite of these the period just passed has been one of the most successful ever experienced by the furniture industry. The demand has been exceptionally strong for furniture of all grades and the problem of the manufacturer has been not so much where the business is going to be secured, as how to fill the multitude of orders that poured in.

As near as can be foreseen, the problems of the past year will be those of the next twelve months. The combined efforts of the furniture men will be devoted largely to studying these questions and striving to solve them successfully. The most important are four in number; the question of material, of labor, of demand or market, and of production.

The question of material is largely a matter for the individual. Committees might be appointed to study the sources of supply of some of the more im-

portant items. If that were done it would rest with each manufacturer to use the information secured as he sees it. Statistics have been compiled which show that the average increase, since 1914, of 57 items entering into the manufacture of furniture has been 150 per cent. In addition these materials have been scarce and hard to secure. During the same period the average increase in price of 265 commodities in everyday use has been 113 per cent., showing that the advances in materials used by the furniture trade has been considerably above the average. In the face of this large increase the price of furniture has been advanced in the neighborhood of 100 per cent. These figures should disprove the idea that the furniture producers are making exorbitant profits.

The shortage of skilled workmen has been one of the outstanding features of the labor situation. Among the reasons for this scarcity of competent mechanics, the rate of pay and the question of hours take first place. One would think that the preference would be for a full day at increased pay rather than shorter hours for the same rate per day. The question of wages was discussed at the recent meeting of the National Alliance of Case Goods Manufacturers held in Atlantic City. The committee on labor in its report says: "The furniture industry must pay wages to skilled workmen that will be the equal of any other business requiring the same skill."

The demand for the products of the various factories has been unprecedented and well in excess of the amount produced. It is freely predicted that this condition will continue for the next three to five years. If that is so, what steps are to be taken to satisfy the demand? Remembering the experiences of the past the furniture maker may not feel like enlarging his plant and increasing his output only to find that the demand has eased off. This shows the wisdom of not overlooking export. With a market overseas, irrespective of local conditions, a place could readily be found for all the furniture turned out. When figuring on an increased capacity it is well to bear this point in mind.

The reasons why increased production is necessary are too numerous to mention here. Two courses are open in this respect, and the progressive manufacturer should take advantage of both. They are greater efficiency in existing plants and enlarging the extent of the operations.

Greater efficiency can be attained by the use of modern machines and increased attention to the layout of equipment and progress of the work through the plant. A large part of the equipment in many factories is out of date and there is hardly a plant that could not be improved by the installation of some new labor-saving device. The effect of production machinery is twofold. It increases the output, reducing the percentage of overhead, and at the same time increases the efficiency of the employees. Work-

ing with good tools gives them a greater pride in themselves and their work.

A careful perusal of the advertisements in this issue will be found profitable to manufacturers who are striving to improve their plants and attain the highest degree of efficiency.

The Enforced Commercialism of the Arts and Crafts

IN an age when we are all concerned—necessarily—with the commercial rather than with the idealistic side of industrial enterprise; when it is necessary to operate our factories along the lines of least resistance; when the call ever comes to us to speed production; when it is vital to us to produce goods which find the readiest demand,—when, in short, our main concern is to show a balance on the right side of the ledger, it is interesting and not a little refreshing to find such a stout champion of the Higher Ideal as the author of "The Uses and Abuses of Wood" (published in this issue).

This special contribution is made by a gentleman of wide experience, and readily finds a place in our columns. At the same time, we cannot subscribe absolutely to the opinions expressed, although the article contains a timely measure of inspiration. Certainly it serves a useful purpose in leaving one with a desire to make the best of the work and materials in hand, and to strive always for the highest levels of practical achievement—a lesson which, in all conscience, should be taken to heart in the construction and furnishing of our public buildings, whose character has such an essential influence upon the community, and by whose works we shall be judged by posterity.

The comparison made in the article in question between our own activities and the results obtained by other peoples in earlier days leaves room for discussion. Assuming the responsibility of taking issue with the author, we would point to the fact that in every phase of life conditions were entirely revolutionized in our day and generation even long before the cataclysm of the last five years. When England and Holland and other countries made common things beautiful, periods and styles were being evolved the world over, and articles of outstanding excellence were being manufactured,—by reason of the fact that infinite pains and infinite time could be expended,—wages then being at one of their lowest levels. Living was cheap, competition was mild, wages were low, time was no object, and there was little or no machinery. Today we have to deal with living costs at the highest world level ever known; with competition in all lines of manufacture so keen that figuring on contracts has become more or less a science; with wages that surpass even the most hopeful visions of those who are receiving them; with time expressed in the unit of a minute instead of an hour; and last, but

not least, with the advent of every conceivable manner of labor-saving device in the way of machinery known to advanced mechanical genius. We venture to think that long after our day and generation,—perhaps for all time, the elaborate handicraft of earlier days will remain a monument and a marvel.

In many respects we are in accord with the writer,—particularly in his appeal for the eternal fitness of things. Native environment is often an essential setting, and misplaced enterprise in this field is sometimes disastrous. "So long as the product was confined to its proper place the product was good," writes the author of the article in question. Herein alone might be found the text for a profitable discourse. Much also might be taken, we think, from what the author says about confusing things—confusion of style in manufacture and design; confusion in enrichment; confusion in the grouping and relationship of furniture.

Lastly, in calling attention to the possibilities of our native woods, the author is making a good point, which must be conceded.

Altogether, we believe the article will be found suggestive and interesting in its departure from the straight and narrow path of things wholly practical in which the great majority of us have been content, thus far, to maintain a commercially sound if somewhat unidealistic footing. The appeal for "something better" is a constructive step in the right direction. Its echo will be found in "Some Notes on Art in Relation to Furniture,"—another special contribution to this issue, in which the closing quotation, "Art may be thought of as the well doing of what needs doing," is peculiarly apt.

Canada has passed her rude pioneering days, and it is certain that in every phase of human effort we must have ideals,—however far short of them we may fall. Emerson tells us: "The chief want in life is somebody who shall make us do the best we can." Those who point us occasionally to the goal of higher attainment are of that exclusive company whose name and fame belong to the Honor Roll of industrial progress.

Charge of Profiteering Passed to Retailer

Delegates to the convention of the National Alliance of Case Goods Manufacturers objected to the charges of profiteering that had been made and passed the charge to the retailers, whom they advised to cut down profits, as sales are falling off.

The manufacturers agreed on standardization of furniture, discussed costs and agreed to teamwork in securing lumber and glass.

Why should people herd in a small house, when there are sawmills and timber ready for the making of wooden houses?

The Hall-Mark of Individuality in Special Furniture

Interesting Elements of Design and Craftsmanship—The Charm of Simple Lines Exemplified, Together with a Few Examples of More Elaborate Treatment

Staff Article

IN all businesses appertaining to the arts and crafts, but in none more than the special field to which this issue is dedicated, occasionally there come opportunities of leaving the impress of personality upon one's work. In such opportunities lie the stimulus of achievement—that stimulus

selected from some of the special orders carried out by The Bromsgrove Guild (Canada), Limited, of Montreal.

Turning to these examples, we have in Fig. 1 an interesting table of the Jacobean type, made especially for a large living-room in the country. Executed

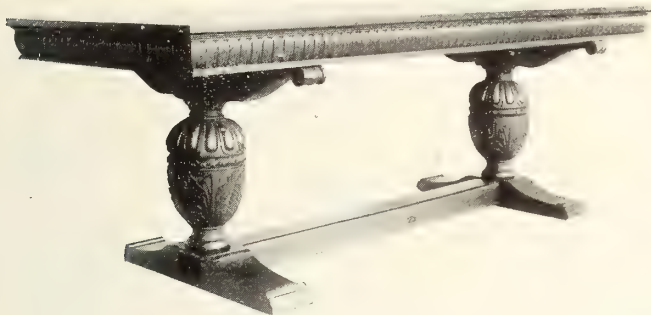


Fig. 1—An interesting table of the Jacobean type.



Fig. 2—Office desk made for the President of the Canadian Pacific Ry.

in which we find escape from the thralldom of the trivial round and common task, and which in its creative possibilities is such a factor of success.

The impress of personality is to be found in the finished workmanship of the furniture illustrated and described in this article, the examples having been

in American white oak, it is all hand-carved, and is finished in a pleasing dark antique color.

The office desk, in Fig. 2, was designed and made to the special order of Mr. E. W. Beatty, the President of the Canadian Pacific Railway. It is made of teak wood, with cabriole legs, the dimensions of the

“Monuments to Canadian Woodcraft are to be found in our Public Buildings”



Fig. 3—The Speaker's Chair in the House of Commons.



Fig. 4—Detail of Speaker's Chair, showing elaborate hand-carving.

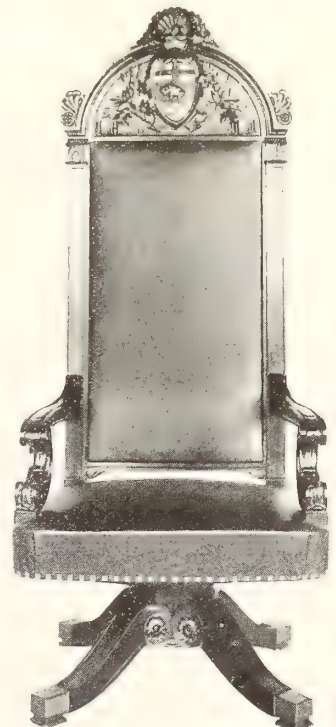


Fig. 5—One of the Judges' Chairs now in the Winnipeg Law Courts.

top being 6 ft. x 4 ft. The lines are simple, but character is expressed in the design and produced in the workmanship.

An excellent tribute to Canadian craftsmanship is to be found in Fig. 3, which is reproduced from a photograph of the Speaker's chair, made for the Hon. Albert Seigny, Speaker of the House of Commons.



Fig. 6—"Dignity expressed in simple and appropriate lines."—A Bishop's chair.

The chair is executed in quarter-cut American white oak. It is designed in the Gothic style, and is all hand-carved. The detail of the carving is brought out more clearly in Fig. 4. The Dominion coat-of-arms, it will be noted, is surmounted by a crown and surrounded by maple leaves, the rose, the thistle, the leek and the shamrock being introduced into the cresting. The chair is covered with Canadian Spanish leather.

Monuments to Canadian woodcraft are to be found in our public buildings. One of a set of Judges' chairs made for the Law Courts in Winnipeg is illustrated in Fig. 5. These chairs are made of mahogany and upholstered in Canadian leather. A noteworthy feature in the example shown is the Manitoba coat-of-arms on the back of the chair, this having been carved in solid wood.

In Fig. 6 we rightly find dignity expressed in simple and appropriate lines. Here we have a bishop's chair, made for the chancel of a small church in the diocese of Montreal. The treatment is a decidedly successful one, suggestive as it is at a glance of the purpose to which the chair is dedicated. It is simple in line, and yet the design of the back panel contains sufficient interest for the important position it holds in a small church.



Fig. 7—Jacobean style in dining-room furniture.

Passing from the severer lines of the legislative assembly, the public office and the church, and arriving at home furnishing, we find in Fig. 7 a charming little study in Jacobean dining-room furniture. In these pieces we have harmony without effort, and the ornamental effect of the spiral turnings is not overdone. The chair is a reproduction of an antique chair, and is covered with a black ground tapestry of good quality.

An interesting example is shown in Fig. 8, in which we have a piece of furniture taken from a special suite made in maple, which had been dyed grey in the wood. This wood was treated in New York by a plant which has since been burned down. It is difficult to get any wood dyed this color satisfactorily, but the suite of which this piece is a part was treated very successfully. Any effort that can be made to produce this dyed maple on a commercial basis deserves to meet with success. The interior of this bedroom suite was finished in Canadian black cherry.



Fig. 8—Maple wardrobe dyed grey in the wood.

The last of the many interesting examples from which the accompanying selection was made is illustrated on the opposite page in Figs. 9-12. In Fig. 9 we show a sideboard, 8 ft. over all, executed in Cuban mahogany, and designed especially to meet the requirements of an oval room. It is a pleasing departure from the cumbrous type so often seen in good homes, the solidity of the pedestals and urns being relieved by the note of elegance to be found in the table in the centre. Here again the carving was all done by hand, and the job was finished in oil, no shellac or varnish having been used. The table is made as a separate piece of furniture, as will be seen by the illustration—Fig. 10. The drawer in the top of the table opens from underneath, as hardware would spoil the effect of the fluting. The pedestals at the side, the detail of which is brought out more clearly in Fig. 11, are fitted up one as a cellarette and the other as a small cupboard. The handle in the centre of the door is of chased brass, and is a copy of a fine old antique handle. One of the urns is shown in Fig. 12. In the time of the brothers Adam these urns were used as knife-boxes. At present, of course, they are only considered as ornamental features, the modern methods of keeping cutlery demanding different arrangements.

We are indebted to Mr. E. L. Wren, Managing Director of the Bromsgrove Guild, for his kind co-operation in the reproduction of the special photographs shown herewith.

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The "Hall-Mark of Individuality" in a Cuban Mahogany Sideboard of Pleasing Design

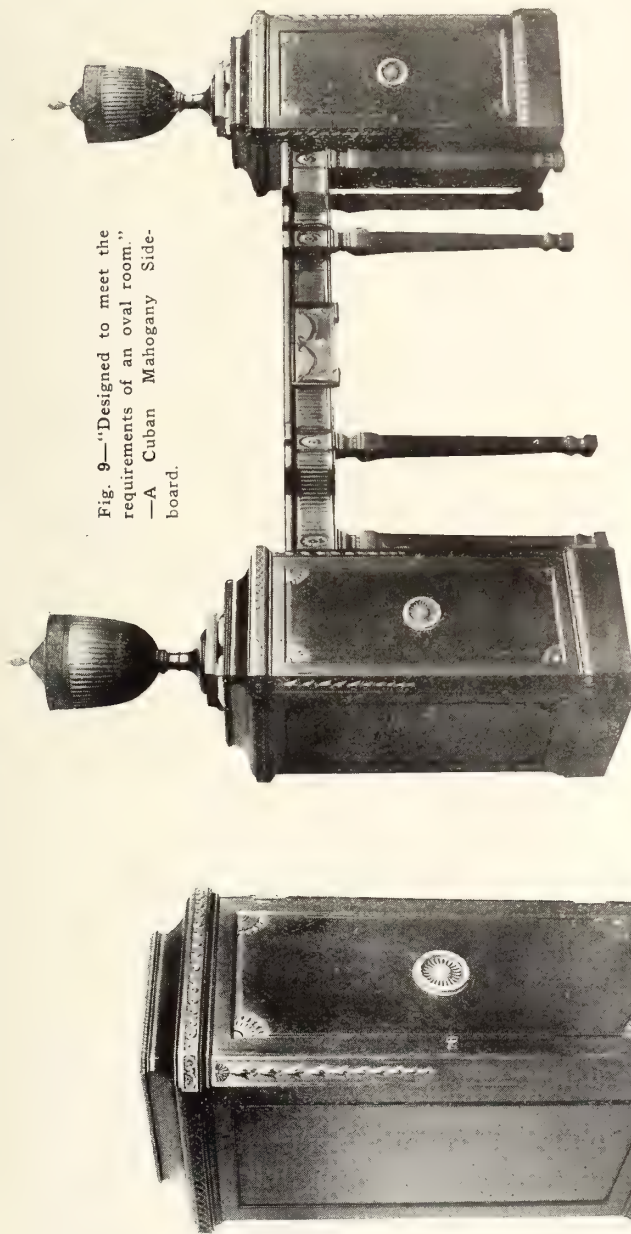


Fig. 9—"Designed to meet the requirements of an oval room."
—A Cuban Mahogany Sideboard.



Fig. 12—Details of one of the urns in Fig. 9. At one time used as knife-boxes, these urns have now become purely ornamental features.

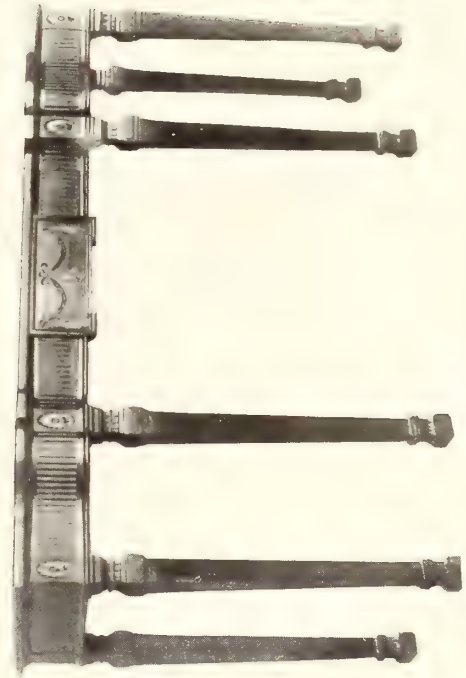


Fig. 10—A separate view of the table shown in Fig. 9.



Fig. 11—One of the pedestals of the sideboard. These pedestals are fitted up one as a cellarette and the other as a small cupboard.

The Manifold Uses and Abuses of Wood

A Discussion of the Opportunity to Develop a Sound National Taste and to Promote the Best Uses of Our Native Woods

Specially contributed by W. T. Castle, Montreal.

THE wood wealth of Canada is immense. We have wonderful organizations to bring it from virgin forests to lumber centres; we cut it into simple shapes for many commercial purposes; we shape the product from wooden "ties" to wooden millionaires; and we accomplish much that is useful between these extremes.

But this is only the material and coarse side of the product. As a Canadian industry, how has it affected the soul or spirit within us? Are we capable of creating something better than wealth or "wooden millionaires?" From our landscape dotted with hideous farmers' homes and our unsightly Canadian villages, we thing not. By inverse ratio, the greater the wealth the greater the ugliness. With all our hacking and cutting of lumber we have not done much with it except make money. The common and coarse product of the market-place called "raw material" has sufficed. We have gone no further,—recognized no other uses, such as that so artistically and advantageously employed in the wooden Chalets of Switzerland, which are a charm to the eye of every traveller. If all human life were suddenly to cease in Canada, what have we to show that we possessed a national culture, a sense and spirit of taste, the adaptation of a national spirit in the beauty of form and line,—that subtle sense expressed by Victor Hugo: "The Beautiful is as Useful as the Useful"? Nothing whatever.

No doubt it stirs the lumber capitalist's pride to see rafts of lumber sweep down our rivers; but it is also his pride to supply pork, beans and flour, while the untutored lumber-jack conceives his forest home,—simple if you will, but built on correct principles and well-proportioned lines, principles and lines which a clever architect could not excel in getting out a "Bungle-O." The lumber-jack's home comes nearest to the purpose of a bungalow; made so true to its setting; unwittingly of good design; its purposes and needs fully met; the canons of good taste satisfied,—though the lumber-jack would scorn the flattery.

Common Things Made Beautiful

We have checked our cultured building progress at the line of the lumber-jack. It is common, you would say, and also cheap. Even so: have we the capacity to make our common things into beautiful things? Holland, with common clay, made its common things beautiful: Holland, with a soul for the beautiful, made its bricks and gave them a charm of color and texture, and produced a style of architecture so natural that it became known as Flemish, and Dutch, with forms so distinct, so admirably arranged, that if Holland suddenly arrested its growth and left petrified villages and farm homes,—all could be placed in a museum as something to marvel at: as curious as that of "Grecian Ruins." The soul and spirit of the people,—conveyed through their common crockery, produced the rare "Delft Ware," which in our time is the pride of the connoisseur, and which in its form, was an inspiration absorbed from the Chinese by the great Dutch traders,—today a connoisseur's priceless treasure. The soul lay in the

people who could make common clay into Holland's beautiful tiles. If today we wished to possess their beauties, we should have to secure the services of some gifted architect.

The Part of Common Woods in Our National Life

All of the woods, such as birch, beech, maple, chestnut,—all classed as common woods, should find some relation and purpose in our Canadian life.

The Italian carved his beautiful chairs from Italian wood,—a very commonplace walnut. Trained sculptors carved it in varied and beautiful forms. The spirit of the Renaissance gave fresh life to their artistic sense. Ancient Doges administered their affairs from stately seats. The varying changes were not the nonsensical whims of fashion, but had their birth in the life and spirit of the people. Italian wood, enriched by time and the skill of the carver, was made beautiful.

Who does not recall the hideous forms that were given to American walnut when converted into furniture in the past days of the jerry furniture-butcher? Now it has come to its own again,—and the worst has happened. It is fashionable, and whether appropriate or not, it is the proper thing; and the common people—not the poorest—will have none else. The so-called "Mission Furniture"—the product of a few isolated Spanish monks who were compelled to create their mission homes without modern tools, and minus the uses of the handy machine screws and nails—formed a type of construction in furniture which for its purpose was incomparable in its simplicity—until an astute traveller saw his chance and "invented" "Mission Furniture," originally cut from the common red wood of the southwest coast of Spanish North America. The monk used hand-fashioned dowels,—showing the plain and good construction; the "inventor" used machine screws and glued bits of wood to take the place of the mission-formed dowel used by the monk,—which held a proper relation to his forms and their purpose.

Now "Mission Furniture" has passed as a fashion. Sought in its day as the "latest thing"; shown in departmental stores as the prevailing style; like an exotic, it ceased to be beautiful when removed from its environment of simple outpost piety and became bedevilled by pandering to vicious taste. So long as the product was confined to its proper place the product was good, and the animating spirit of those who conceived it was beautiful and simple. Now, who is it that worries to become the possessor of "Mission stuff?" The dilettant will not have it; Bohemia has cast it out; and yet, without its falsity, and as the monk made it, it is worthy of its creators.

Wood Camouflage

Who has not been brought up short to look at the beautiful display of Canadian woods in the terminals of the C. P. R., and has not wondered from whence they came until informed by "labels," which sent him away puzzling as to why they were not made

into uncommon things, and wondering who was responsible for this neglect? One would search in vain to discover furniture designed rationally from these woods. He would find that they were used chiefly to camouflage rare and imported woods.

Shops galore confront one with bad imitations of imported woods—our beautiful ash masquerading as oak, and chestnut as mahogany,—stained till it has become, as the French wittily say, “plus Catholique que le Pape.” One’s taste at last becomes so bedevilled and corrupted—the maker having humbugged him, perhaps, into accepting his beautiful chestnut as an impudent imitation of mahogany—that the poor, uncouth buyer at last insists that the rich variations of rare mahogany shall present the even colour of its false imitation!

My plea is that while rich and rare woods are needful—and they are of surpassing beauty—our native woods should not be deposed from their rightful place by this shameful mendacity.

Suggestion—and Confusion

Recall the ancient King of England, who, while out hunting, losing his way sought shelter in a woodman’s cottage, and took his ease in a fireside chair made by the peasant,—and found it so comfortable that he ordered copies for his palace home. And so we discovered the Windsor chair,—as comfortable as a highly upholstered fireside seat of the present day.

Conceive the picture,—an English hunting party gathered in a comfortable English inn without its traditional Windsor chairs: it is simply not English. English craftsmen of old were compelled to use their native woods,—oak, pear, and apple-wood. Their homely taste found expression in the formation of their interesting, well-constructed furnishing requirements simply by following and expressing the spirit that the savage possessed when he beautified his war canoe and its paddles with carved enrichments, now dignified in technical books as “Savage Art.” The savage never confused his “Art” with the legitimate purposes and use of the paddle.

We confuse things. Painted pine is ridiculous when adapted as a crowning feature to a base structure of brick, and compelled to sit uneasily as a “cornice” or “coronation” to our hideous brick structures,—and often not brick, but encased with brick. It is neither common honesty nor good taste, and he who commits this crime may rightly be suspected of “sanding his sugar.” No painting will better it—or conceal its depravity.

A Plea for Simple Good Taste

Our frontier life is long past, and Canada’s main streets should cease to be the horror they now are. (In this, of course, I am not referring to our large cities, where the skilled architectural designer has all the resources of wealth at his disposal. Can we not construct as the simple builder of Old England in the Elizabethan age—who imbued his mortar and wood with the spirit of an artist, although he knew it not?

The artistic craftsman will polish his pebbles, inset them in common metals, and produce a beautiful jewel. You cannot have diamonds by faceting glass, much as it may please the common mind.

Who would wish Canada to be judged by its present-day neglect and indifference—its spirit soaked in materialism, its forms harsh, ugly and inappropriate? Why convert a rural church into a joke by imitating

a cathedral, when simplicity and a decent sense of fitness would reveal a sense of beauty? Why not cease pretence and humbug, and in their place cultivate simplicity? All good art, from its highest reaches to the lowest is based upon simplicity. Use the materials at hand, and fashion them into a simple and beautiful thing, a joy to behold.

I recall a small, old-fashioned village in the Berkshire Hills,—a village inhabited by cultured millionaires, where an apothecary’s shop is the only sign of commerce. One of its joys is the possession of an old village church of wood, built on correct and plain lines,—a church in which paint is not allowed to modernize a simple and lovable structure. This asserts the truth that a millionaire need not necessarily be a Philistine. It took time to give this church its tone and colour.

But time passes quickly, and we are bound to concern ourselves with the second and third generations. We are quite willing to conserve and bequeath our monies to succeeding generations: would it not be wise on the part of those whose wealth permits it to cultivate some sense of taste, some impression that this is worth while,—this new sense of insight into a life that consists “not in bread alone”? We cannot believe—at least we would not wish to believe—that a rational, if not a national taste may not develop to save us from that gross materialism which is the result of collecting wealth to the neglect of developing a better spirit. No beautiful life is expected to thrive amidst neglect,—with stark, staring ugliness in the street and home. And the pity of it is that the materials are close at hand, and all about us. A wooden railroad tie is needful, and so are other common things made of wood,—but why despise the things that may be as Beautiful as the Useful, if controlled by a love and knowledge of the charm of life that accompanies good taste!

The Possibilities of Our Native Woods

We should encourage the will, wherever revealed, that wishes to find expression in the woods native to our soil. The woodmaker prefers to go right, but hampered by the law of supply and demand he dares not. Few would encourage him. It should not be asked of him to fashion things that do not meet the demands of the market-place!

To-day we are erecting public buildings in our great cities. Have we any concern in, or are we conscious of, the part our native woods might play therein? Shall future generations come to see our beautiful woods converted only into forms that reflect our neglect of opportunity? Shall it be their witness that we attained no further than the ideals of “office standards”,—that having eyes we could not see? Is it possible that even our standards of beauty in furniture must be taken from the office, leaving only plain and ugly utility to posterity?

The glory of Antwerp as contrasted with Liverpool lies not in its wonderful docks and its commerce, but in that its chief possession is Rembrandt’s “Descent from the Cross.”

Switzerland is a typical example of the power of a people to convert its wood into chalets that charm the eye of a traveller. Contrast this with the hideous Canadian village,—still more, with its hideous interiors. Then it is brought home to us that with all our wonderful material, and with all our knowledge of its commercial uses, we do not attempt to make that ma-

terial beautiful. We gain our wealth by its commercial uses, but its abuse lies with dull-headed materialism that scoffs at its transformation into beauty—the value of which satisfies the soul and spirit.

We say that the higher ideal is not necessary, that it increases the cost, and that generally it does not pay,—unconsciously confessing that we neither love it nor need it in our life.

The British Toy Industry

High Quality and Finish—British Specialties—The Needs of the Trade

ALTHOUGH the absence of German competition has resulted in a striking extension of the toy and game industry in this country during the war, it would be a mistake to regard this particular branch of British trade activity as an entirely modern equipment. Long before August, 1914, toys provided many people in Great Britain with a livelihood. There were always innumerable lines which Central Europe produced in prodigious quantities and at absurdly low prices and against which British enterprise was unable to compete. Hence arises the cry for protection from those manufacturers who have installed plants to turn out articles in which Germany has hitherto enjoyed a monopoly. In the ranks of the British toy manufacturers, however, there are men as keen on obtaining official encouragement as others are on securing the imposition of tariffs. They believe that Germany is in as bad, and possibly a worse, position than ourselves in respect of labor and raw materials, and so long as the die is not loaded against them they are prepared to compete. In the case of certain classes of toy they have no fear whatever. Big wooden articles, for instance, have always been

a British specialty, and Germany has failed to injure the business of those engaged in manufacturing such goods.

That some of the toy makers are by no means asleep is proved by the decision of more than one to pay a visit to Germany to ascertain the true position with regard to labor and materials. It is regarded as improbable by some manufacturers that the Germans will be able to place goods upon the market at the prices they were satisfied with before the war. The days of cheap toys and games are gone, probably for some years. The superiority of workmanship, which has always been the aim of the British producer, is now more carefully cultivated than ever, and not a few important firms hold the view that the future of the industry in the United Kingdom depends to a great extent on quality and finish. A toy-maker who has specialized on wooden horses, declares that he can afford to ignore foreign competition on these grounds alone. When it comes to the question of official encouragement and assistance the position is more complicated. The German manufacturer who can show he has reasonable prospects of successful trading can go to a bank and obtain capital to enable him to launch out in his business, whereas such facilities are practically nonexistent in this country.

Another difficulty hampering the prospects of the British manufacturer is the long credit system, of which the Germans have made a fine art. The wholesale dealer in the United Kingdom has to pay cash for his goods while giving credit to the retailer. This is a difficulty which might be minimized if not solved by the provision of generous banking facilities.

Some men are known by the company they are unable to get into.

An inefficient workman on a three-drum sander can spoil an immense quantity of good sand-paper.

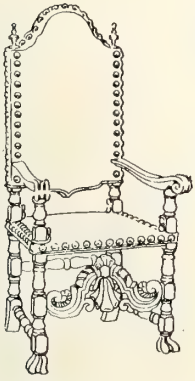


Spanish Renaissance table in walnut. An adaptation by Baetz Bros. Furniture Co., Limited.

The Trend of Furniture Design in 1920

Last Five Years Bound to Have a Marked Influence—Italian Renaissance Design Peculiarly Adapted to Our Characters and Surroundings—Untried Field in Furniture of Normandy, Brittany and Provence

By Wm. Millington



PERHAPS before venturing to say what the trend of furniture design in 1920 will be, it would be well to inquire what all art, and more particularly domestic art, is, and to see if by looking backward we shall be able to get some help to look forward intelligently.

All art whether applied or fine is but a form of expression of the thought and purpose of the age. The gothic churches dominating the town and villages of Europe express the religious thought of medieval Europe and then as domestic thought began to take a more important hold on the minds of the people we see the wonderful domestic architecture of Europe develop. As we watch it develop we can get some idea of the habits and modes of thought of the people. So with the furniture. How well the sturdy, well constructed furniture of Elizabeth's day expresses the simple, rugged characters of such men as Drake, Grenville, Frobisher and a host of others who have left such an enduring name on the history of the world.

Character Influences Style of Furniture

These men would have been just as much out of place and as uncomfortable with the effeminate furniture of the 18th century as a Beau Brummel with his affectations and pedantry would have been in the manly surroundings of the 16th and early 17th centuries.

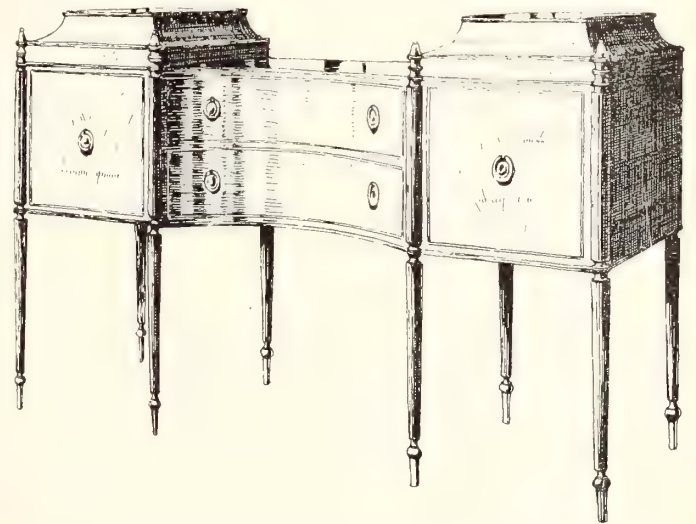
We have had a very striking example of art expressing the thought and character of the people who create it during recent years in the modern German school. To many people who looked at the aggressively brutal statue of Bismark, erected at Wiseman a few years ago, it was a riddle, yet if we had been able to look forward to Belgium and France as they are to-day it would have been no riddle, for now we know that it was expressing the latent brutality and savage aggressiveness of Prussia which in 1914 showed itself by acts of inhumanity and vandalism such as the world had never seen.

Just as the new spirit of inquiry and the revival of classic learning in the 16th century rang the death knell of the Gothic and ushered in the classic revival known as the renaissance, which was not a new style, but, as the word indicates, a re-birth of the Greek and Roman styles to fit the needs and ideals of the 16th century, and as the Napoleonic wars turned the thought of France into Imperial channels producing the Empire style, so will the war of the last five years leave very marked effects on the design and decoration of the future. These effects will not be noticed at once but as we can already begin to see the effects on the social structure of the world we shall soon begin to see them in the artistic.

The whole point of view of mankind has been changed. The thought and outlook of the world has been broadened and developed. The enforced simplification of our standards, the readjustment of values and the changed relations of capital and labor are bound to leave a very deep impression on our thoughts during the years to come. These will show themselves when the present reaction of extravagance has spent itself in a greater simplicity and sturdiness of thought and purpose, which will, undoubtedly give added impetus to the already marked tendency towards more simplicity of design and substantial forms of construction. This is now seen in the marked increase in the demand for furniture of the Elizabethan and Jacobean periods. This was undoubtedly the most typically Anglo-Saxon furniture that the world has produced.

European Influence will be Felt

Just as the opening up of the orient to western travellers affected the furniture and decoration of the middle of the 18th century and as the large volume of travel from this continent has already established a definite position for furniture of European design in our homes, so the travel of many thousand of our



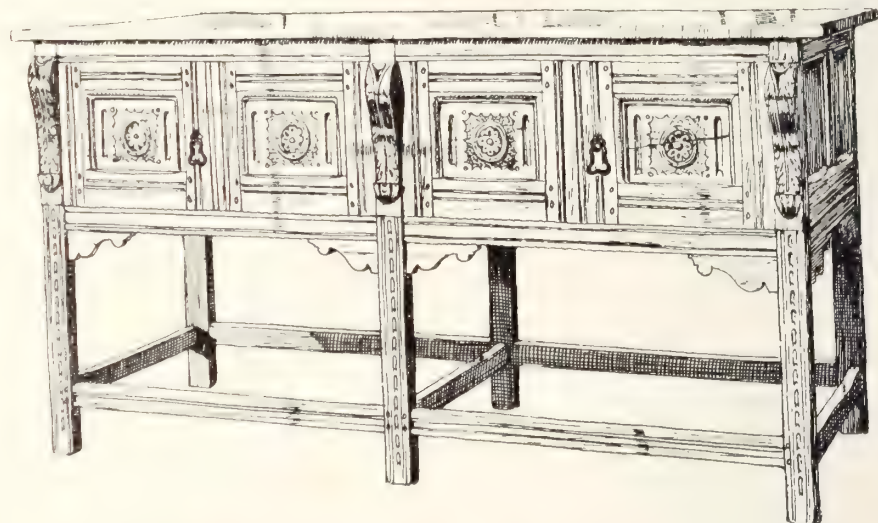
Simple and refined rendering of the Colonial style, suitable for many present-day homes.

young men to England, France and Italy will have some effects on the demands of the future.

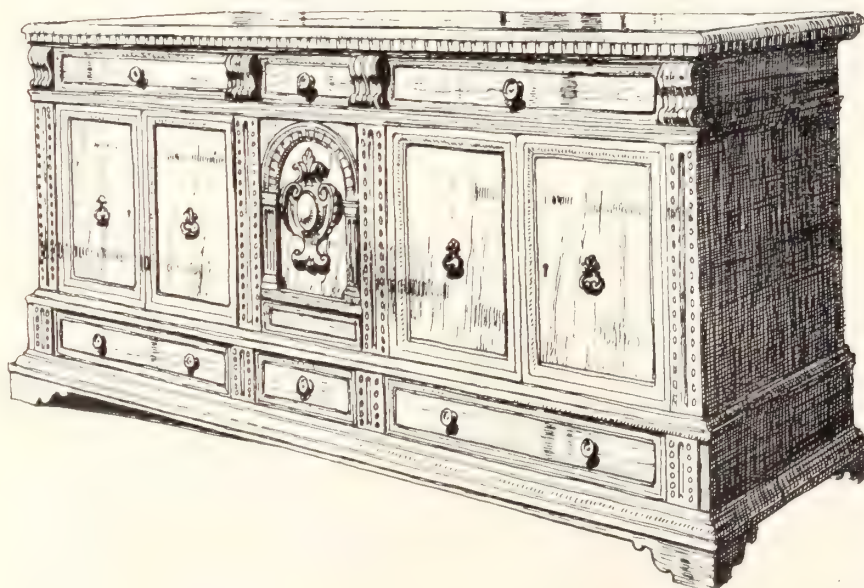
For the past few years there has been a great interest displayed in the furniture and decoration of the Italian renaissance. This will without doubt be stimulated in the future, especially as many of the broader and simpler forms of Italian furniture are capable of adaptation to our needs and will not be out of harmony with the spirit of our times. For as Harold Donaldson Eberlein in his book "Furniture of the Italian Renaissance" says: "The habit of life in American country homes approximates, in a measure, the habit of life in Renaissance Italian Villas. The



Modern rendering of French furniture of Provence. Capable of many interesting interpretations.



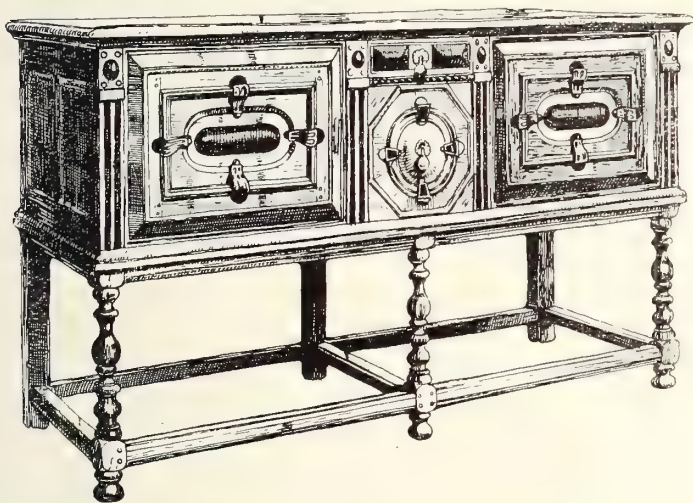
A simple rendering of the Elizabethan, suitable for many of the English type houses now being built



Italian sideboard simple in detail and dignified in proportion. Adapted from the Florentine rendering of the Renaissance.

occupants of those villas were an outdoor people with an intense love for their gardens and all outdoor interests, just as the occupants of the majority of our own country places. The general similarity of climatic conditions, too, argues the wisdom for us, of cool, restrained interior composition, no less than for them. Between their houses and their gardens there was a conspicuous degress of unity. This ideal commends itself to many of our citizens and they seek to realize it. Through the analogy, therefore, Italian Renaissance interiors and furniture make a practical appeal to our consideration and provide abundant scope for adaptation."

As with Italy so with France. Our thoughts have been on the battle fields of France for nearly five years and as we have watched her in her hour of trial we have learned to admire her as never before. Some of the culture and refinement of that great nation will come again into our work and show itself in a return to some of the more refined and simpler forms of French furniture. In passing it might be men-



Jacobean sideboard in oak or walnut with beech and boxwood ornaments, in the spirit of the early American furniture.

tioned that there is practically an untried field in the 18th century furniture of Normandy, Brittany and Provence, which is capable of many interesting adaptations.

Colonial, a Distinctive Western Style

We must not forget that we have learned a new meaning of Canada during the last few years and that with these new ideas we are bound to be lead to think more of our Canadian homes. It would be strange if this did not lead to a revival of interest in the one style that belongs peculiarly to this continent, namely, the Colonial.

There is beyond question an increasing demand for furniture with a colonial feeling; not of the heavy, scroll type but the beautifully proportioned and refined colonial with the turned and reeded legs which is so appropriate for many of the small houses, of a Colonial type, which are being built to-day.

It seems logical if we have to have a distinctive school of furniture design that it would naturally be a development of this style to suit our present day ideas and requirements.

These are the broad and general directions which we might reasonably expect the designs of furniture to follow in 1920.

We must not forget that the increased art educa-

tion and the ever increasing number of periodicals devoted to the home, have had a great deal to do with improving our standards of good taste. These will undoubtedly exert a much greater influence in the future and continue to keep before us the great principle that good design consists principally in good proportions and simplicity and that ornamentation and hand carving do not necessarily make beautiful furniture. We can have costly furniture made of beautiful wood with the finest carving it is possible to add but if we have not good proportions all we have is a vulgar display, not a beautiful piece of furniture.

It is only necessary to look back a few years to the dragon and dolphin period to prove the truth of this. If we think of this furniture of ten years ago and then look at the great advance that has been made in the design of the furniture of to-day, we can look forward to the future with great confidence; knowing that we shall be asked to produce furniture of simple and good proportions, with a little ornament, good in design, and carefully placed to the most artistic advantage. Constructed in a sound and scientific manner and suitable for the homes of today. This will not be a new style that is born in a day, but will be a natural evolution built upon the best traditions of the master craftsmen of the past and present to suit our modern ideas of what the furniture of the home should be.

Prospects for Piano Importations Into Britain

In response to inquiries from a Canadian piano manufacturing firm as to warehousing facilities and marketing prospects in England. Mr. Harrison Watson, Canadian Trade Commissioner in London, writes:

It is almost impossible to obtain stock or sample rooms anywhere at the present time—a position that is confirmed by several Canadian manufacturers' representatives who have called here recently. On consulting the editor of *The Music Trades Review*, I was told that, outside of the warehousing attached to the premises of certain music dealers, there is not known to be any storage accommodation in this country particularly adaptable for pianos, which of course require an equable temperature, and I should judge that every kind of public warehousing accommodation in the country is pretty occupied at the present time.

Upon the other hand, if prices are right, and the difficulty overcome of Canadian patterns generally being different from those in this country—notably that they are heavier and bulkier—business should be obtainable, because not only are the former supplies from Germany and elsewhere cut off, but imports from other countries are severely rationed and subject to license, while the British piano industry is in an unsettled condition owing to the difficulty of obtaining actions and other parts.

Where prospects of business are favorable, it is a wise policy to maintain a resident agent, who might find it advantageous to get in touch with some of the wholesale piano merchants, who could not only advise him about the position, but possibly furnish some of the sample and warehouse accommodation required.

The road to success is up-grade all the way, with lots of engine trouble and skidding

Selecting and Designing New Patterns

Having the Different Parts in Any Line Interchangeable, as far as Possible, Will Increase Production, Lower Manufacturing Costs and Simplify the Work in the Factory

Otto A. Jiranik*

THERE is no doubt that at the present there is a greater demand for furniture than the combined output of the trade can satisfy. Under such conditions it is very difficult for the manufacturer to bring out new patterns, and at the same time increase the output of his factory.

Still, to keep up with the times and other lines produced, it is necessary for any progressive furniture factory to bring out from season to season a few new patterns. A lot of care and study should be devoted to make these patterns as practical and as striking as possible.

It's no trick to-day, on account of the conditions of the trade, to sell furniture but no manufacturer should lose sight of the future as we do not know how long the present strong demand will last and without a doubt an easing off in demand will come sooner or later. So the manufacturer that is preparing and modelling his line to the best advantage to meet all eventualities will have less trouble in meeting adverse conditions.

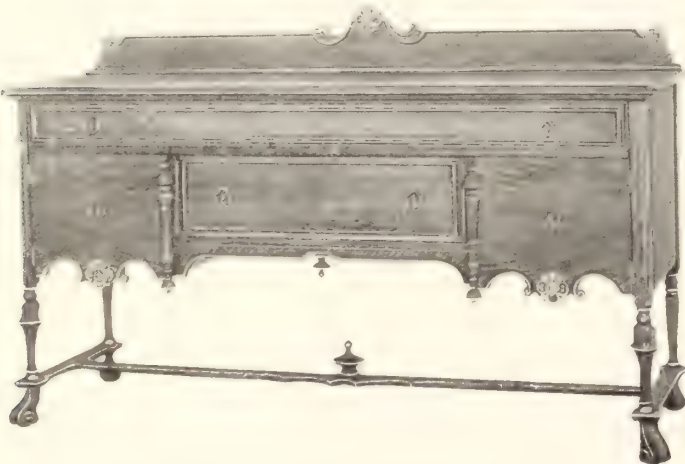
A factory that will as far as practical standardize its output, will not only further the production but will make a better showing on the credit side of

would be interchangeable, while at the same time the same top, rails, drawers and stretchers used for all styles.

The illustrations on the following page suggest four different styles of library tables with interchangeable legs and ornaments. The Queen Anne ornament should consist out of a shaped veneer piece something like a shield, while the William and Mary



One of the McLagan line. A well-proportioned buffet in American Walnut.



Attractive quartered oak buffet manufactured by the Canada Furniture Manufacturers, Limited, Woodstock, Ont.

the ledger at the end of the year. A man that is kept constantly at work on one style of post, drawer, or top will be able to produce a much larger quantity than if he were to work every day on something different and this increased efficiency naturally will cut down the cost of production.

In getting out new designs special attention should be given to standardizing the lines and working out designs along lines that will enable the different parts to be interchanged without detracting from the general appearance of the article. For instance in a library line the most popular patterns to-day are the Queen Anne, Louis XV, Louis XVI, William and Mary and Italian Renaissance styles. These designs could be worked out in such a way that the legs and ornaments

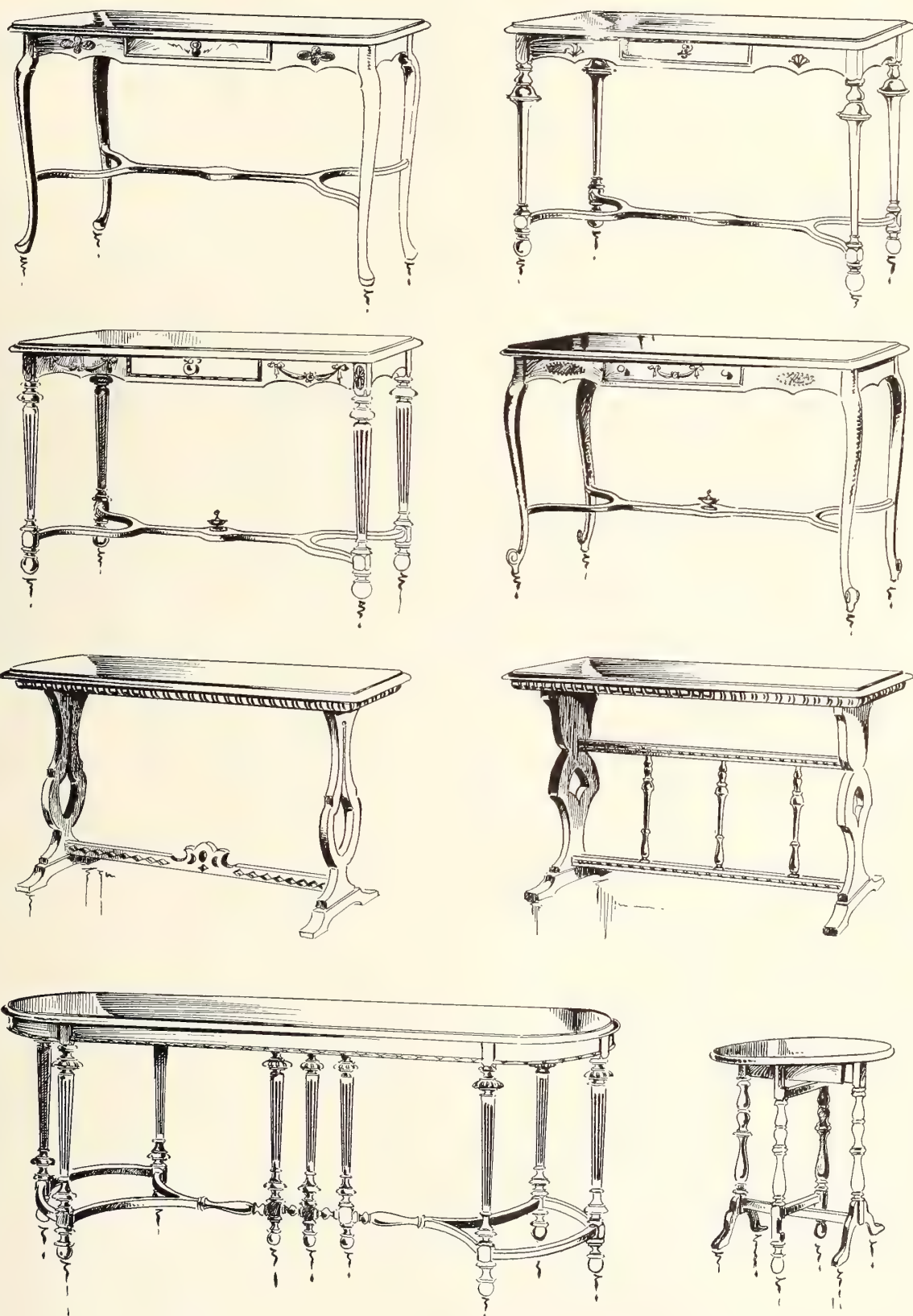
pattern will require a shell carving. The Louis XVI ornament consists of a fancy moulding that is glued on the edge of the drawer with a few festoon effects and rosettes on the legs. The fluting on the turned legs is always characteristic of the Louis XVI style. Ornaments very similar in design may be used for the Louis XV style.

These patterns should be made in mahogany and walnut but the proportions of each will depend largely on the grade of article and the trade catered to. A medium grade line could be made, consisting of the accompanying designs, in gum and finished in mahogany and walnut colors. This method has been tried by a number of manufacturers with good results. The idea of making a number of parts interchangeable can be carried out in other lines such as dining or bedroom suits. It will be found to help increase production and at the same time give greater variety to the line without necessitating the carrying of a large number of patterns.

Mouldings for Period Designs

In designing mouldings for such styles as Elizabethan, Jacobean and Tutor one would naturally work out something bold and with deep undercuts. The Queen Anne period calls for gracefulness of lines, simplicity of beads, fine gracefulness of shell and care in color. Adam and Hipplewhite require the delightful husks and the simple refined mouldings with the well proportioned swag.

*Consulting Designer, Grand Rapids, Mich.



Suggestions for tables with interchangeable parts and ornaments.

The Reproduction of Period Furniture

Considerations Essential to Success in the Factory, Together with a Few Examples of Finished Workmanship

Staff Article

FROM the standpoint of the cabinet-maker and the carver, the reproduction of Period furniture is one of the most interesting activities of the trade, calling, as it does, for a high degree of both skill and experience,—experience not less than skill,—for many of the results that are essential to the finished product can only be obtained by those who have devoted much patience and experimental work to the orders entrusted to them. In the reproduction of this furniture, to attain success the workman must have a certain feeling acquired in the shaping

that nearly all the pieces illustrated and described in this article have the hard wax finish, which has been found so satisfactory in wear and durability.

The illustrations used in this article have been selected for the Annual Furniture Number of The Canadian Woodworker from a number of interesting examples among the special order work of Messrs. Henry Morgan & Company, Limited, Montreal.

An inviting interior is shown in Fig. 1. A feature of interest in connection with this room is that all the old oak used in the furniture was taken from proper-

ties built three hundred years ago in the neighborhood of the old castle of St. Ethelfreda, in the town of Tamworth, Warwickshire, Eng. The design is Jacobean, and the pieces are typical of the massive English oak furniture built during that period. We are informed that some of the old oak beams are still in the Morgan Company's workshops, pending the requirements of customers interested in the antique. The oak panelling and furniture shown in the illustration were specially designed and manufactured for a Montreal residence.

Passing reference has been made to the Jacobean table, shown in Fig. 2. This table is of good design and proportions. It was made for a large dining-room in one of those palatial residences overlooking the beautiful Lake St. Louis, in the Province of Quebec. It is of solid oak, and its dimensions, closed, are 6 ft. 6 in. x 4 ft. 6 in., extending to 18 ft.



Fig. 1—Oak panelling and furniture in a Montreal residence.

of the pieces rather than have been trained to the work mechanically. The best results in the higher productions are attained by those who make a hobby of the work, and by those who have some regard for the artistic and creative, as well as for the commercial side of human enterprise. Perhaps, then, the main essentials to success are the skill and experience needed in the manufacturing process, care in the selection of material, and a close adherence to every detail in carrying out the design. As a single illustration we may refer to the finishing process. Take, for instance, the Jacobean extension table shown in one of the illustrations. Here one may plainly see the rubbed effect reproduced on the outside of the twists of the legs. Another point, also, is that in keeping with the Jacobean original, the grooves between these twists vary slightly in their depth, as was the case with all the old hand-carved work. This detail, of course, could not be obtained in machine-turned work.

Speaking of finish, it may be of interest to note

when opened. The two ends slide on a centre frame, thus admitting extra leaves, and providing seating accommodation for twenty persons. The design is pure Jacobean, the carving and turning on the legs being all hand cut, conforming in detail with the work done in those early days of oak furniture. Work of this pattern, modernized and machine-turned, has found a large market, but it is only in the high-priced work, such as is illustrated in our example, that the period which it is designed to represent can be reproduced accurately and effectively.

The birch cabinet shown in Fig. 3 is simplicity itself, the predominant feature, perhaps, being the Queen Anne legs. The cabinet is finished in dead black, the enrichment being hand-painted in gold. The floral decoration is carried out in delicate tints of blue and orange. The Japanese influence, without the lacquer, is well established. The furnishing of rooms in the Eastern style is becoming very popular, and although the lacquering is essentially an East-

ern art, both Canadian and United States workshops are producing wonderful work in this field.

The chair and settee shown in our next illustration, Fig. 4, are part of an order designed and manufactured for the ball-room of the C. P. R. Royal Alex-

by using the lumber green for the bending pieces of these chairs, not only are strength and durability assured, but also the chair will stand any heat—any climatic conditions to which they may be subjected. This is noteworthy in a country like Canada, where

much heat is required in our homes and buildings,—heat usually void of all humidity. In passing, one may observe that the Windsor chair handed down to us is said to have originated in "the Royal and Ancient Borough of the City of Windsor," but the originator of the design has remained nameless to this day. The



Fig. 2—A Jacobean table of good design and proportions.

andra Hotel, Winnipeg. The imaginative reader perhaps will conjure up a picture of the pleasing effect of such a room, elaborately lighted, with rows of chairs and settees and draperies beautifully blended together, all producing that delicate harmony which is so effective a setting to the "light fantastic." The

chair and settee are on simple Sheraton lines, and are made from our native birch and maple. Note the fretted cross-rail and upholstered slip seat covered in striped silk tapestry. The finish is in dead black. The painting is hand done in Japanese effect, gold colors predominating.

The Windsor chair, shown in Fig. 5, is the best in attractiveness and comfort that the Windsor design has to offer. The chair shown in the illustration is an exact copy of a chair now in the South Kensington Museum in London.

It is interesting to know that the manufacturers not only make this chair throughout, but grow their own trees of rock elm to produce the lumber for it. Each year before the leaves have fallen the

trees are cut, and the bending pieces are put through a live steam retort and shaped as required. Afterwards comes the drying process before the material is made up. We are told by Mr. Riley, the Manager of the manufacturers' cabinet-making factory, that he has proved beyond doubt that

Jacobean drop-leaf table in this illustration is of the gate-leg type, with plain pattern leg turnings.

An ingenious bit of furnishing detail is shown in our last illustration, Fig. 6. An artistic radiator cover—a combination of wood and cane—transforms that part of a room which had previously contained an ugly painted or gilded succession of shaped iron castings. These covers can be designed to the requirements of any room, and to harmonize with any furniture periods. The cane panels permit perfect radia-



Fig. 3.—Birch Cabinet in simple yet effective design.



Fig. 4—Sheraton settee and chair.

tion of heat, and for durability rank with the brass grills, or wood slats. In halls or drawing-rooms, excellent effects have been produced in the Louis and Jacobean periods. The chairs shown in this illustration are Jacobean. The cane backs are distinctively a copy of the old cobweb pattern. The carving is low relief. The twists are all hand-cut.



Fig. 5—Windsor chair and Jacobean drop-leaf table.

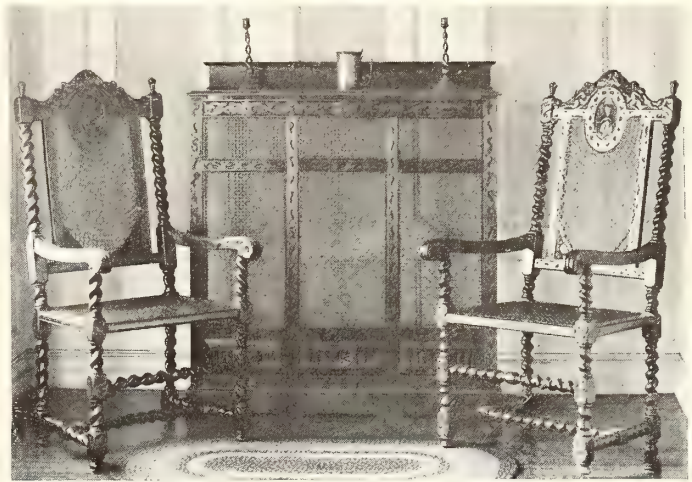


Fig. 6—Illustrating the transformation effected by the artistic cane radiator cover.

Some Notes on Art in Relation to Furniture

By G. S. L.

THE craft of the cabinet-maker is of great importance. Today, of course, it covers a much wider field than formerly. A chair, for instance, at one time a luxury for a king, has now become a commonplace. The cabinet-makers of old were fine enough fellows in their way, and we can learn a great deal from them, but modern conditions have revolutionized the craft. The roughly-hewn chest, which practically amounted to a dug-out, will no longer serve. The cabinet-maker of today can and does show a finer skill and execution than his fore-runner ever dreamed of. The simple chair now calls for strength, comfort, good design and proportion, and it must be produced at a reasonable cost. In the course of evolution the "cheese cupboard" became the "Yorkshire dresser" and then the modern sideboard; the chest to which was added a back and arms became the settle, and so on, to our modern sofa and settee; from the linen press was evolved the chest of drawers and the modern wardrobe.

These changes have brought with them the demand for a care and exactitude entailing knowledge and experience on the part of the cabinet-maker and designer, which, unfortunately, are seldom appreciated. The designer and workman of today must vary in their knowledge and powers of application from the requirements needed in the making of a dainty boudoir article to those demanded in the furnishing of a city hall. They must jump from a royal train to a pleasure yacht,—from liner to office equipment,—from the flat to the luxurious hotel. Cabinet-making, again, is an art which cannot be disassociated from the greater art of architecture.

This widening of the field has of necessity produced the specialist, for it stands to reason that it is very difficult for a man to acquire a thorough training in every branch of the work. I am assuming, of course, that the highest standard of workmanship is aimed at; otherwise, the results would be disastrous for all concerned.

Furniture designers and cabinet-makers must be able to equal, if they cannot surpass, the finest work done by famous men of their industry whose names are now household words. An influence of tremendous importance is the introduction of modern machinery, which compels a certain collaboration between the workman and the machine, and between the artist and the executive,—that is, if satisfactory results are desired from the standpoint of use, beauty and cost. Art and Commerce must now go hand in hand, and neither the one nor the other can afford to adopt a superior attitude. In this connection I fear that the executive is not always fair to the designer or to the workman. Naturally anxious to increase his business, and obsessed with this idea, the manager seldom allows sufficient time for thoughtful design and good workmanship. In his defence it must be said that he, in turn, is often pressed by an unreasonable and indiscriminating public committee or customer, as the case may be.

To cite an instance. A customer may desire a dining-room set, and, of course, it must be designed in one of the alleged "period" styles. It is probably for a small flat, but the style selected is more in keep-

ing with an hotel dining-room. The designs must be submitted over night, the price is shaved to a painful minimum, and the time for execution is cut down to the very lowest in order to be on time for the return of the customer from the country. These conditions are more or less imposed upon the salesman or the head of the firm, with the result that the design suffers in its execution and the set is late in delivery. An atmosphere of all-round dissatisfaction is thus created.

Another point is that we have to consider the plain man,—the man in the street. If we are going to encourage good furniture,—well-made and well-designed, we must make it quite clear to the plain man that art, design, and good craftsmanship are not remote and luxurious things. We must remove from his mind the habit of thinking that such things "are not for the likes of him." No technical verbiage is necessary, and there is nothing mysterious or occult about the idea that things should be made well, and can be made well,—and must be well paid for.

In submitting these notes to readers of *The Canadian Woodworker and Furniture Manufacturer*, I am thinking always of the highest attainable results. I will have nothing to do with second-rate or shoddy work, nor can I make any allowance for it. It is extraordinary the number of well-informed people who are content with cheaply-made, and therefore poorly-made houses and their equipment,—furniture and books, and who, strange to say, would be the first to condemn a shoddy or second-rate game of football or baseball. One standard for pastimes, and another for the serious and important things of life which are made, and which are supposed to endure!

A little less anxiety to make a sale on the one hand, and a little less desire to get a thing cheaply and quickly on the other, will do much in the way of producing good and enduring furniture.

In any work of art, design and workmanship appear to be inseparable: they interlock. Today we have master workmen and master designers who appreciate this principle, and who are capable of turning out work comparable with the finest products of earlier times. This applies to Canada and to Canadian craftsmanship. It must be borne in mind that a thing cannot now be wholly man-made, and certainly it should not be entirely commercially-made, if it has any pretensions towards art and good design.

A warning should be given in connection with a ridiculous and excessive regard for the antique and for old things just because they are old. Such an excessive regard is unfair to the originators and designers of our own time. I do not believe that an old thing should be copied. It can never exactly live up to immediate requirements. It can only be corrected, taken from, or added to,—a point at a time. Good furniture, like everything else, must be well-bred.

To get the best things done in the best way, one must go to capable men who have an intimate knowledge of the best that the past can offer, and allow them to interpret that knowledge in modern form according to the conditions of the present day. Art can be brought back to workmanship, and this in Canada, but the public must be moulded to the views

of instructed thinkers, and educated up to the ideas of those who care for what is really beautiful. They must come to understand that Art does not necessarily mean old, quaint or curious things; neither excessive nor luxurious ones; nor, of necessity, pictures, or statues, or music.

I conclude by quoting Prof. W. R. Lethaby, who, in writing of workmanship, says: "Art may be thought of as the well doing of what needs doing. Every work of Art shows that it was made by a human being for a human being. Art is thoughtful workmanship."

Should Export of Furniture Be Overlooked?

*What Foreign Trade Means to the Furniture Manufacturer—Steady Permanent Business
Desirable Asset—Not Affected by Fluctuations of Local Markets*

By Economist.

One hears and reads a lot about the export trade and on all sides it is freely admitted that furniture is one of the commodities that is in great demand. It is said that if the furniture manufacturers were to go after some of the business that is offering and make good connections they would work up a strong, permanent trade.

Upon making a few inquiries one is forced to the conclusion that this opportunity is not being grasped, in other words, the furniture manufacturers appear to be indifferent or do not realize the real value of an export business.

There are many reasons for this attitude. They are taxed to the limit of their present capacity (note the use of the word present), to supply the home market. Materials are scarce and high in price, and skilled mechanics are hard to secure. These and other factors give the manufacturer so much concern that he feels he could not engage in export even should he so desire. Anyway, with strong local requisitions why worry about an overseas trade?

The question that immediately comes to mind is: Is the present demand going to last? No, not indefinitely, that's sure. A year or two, perhaps three years. Well, when the present call eases off will be time enough to think of foreign trade. Will it? If foreign connections are once made and trade established in other channels it will be most difficult for the Canadian furniture manufacturers to secure a foothold in outside markets. The opportunity is now if they will but grasp it.

There are certain benefits and advantages accruing from an export trade that are worthy our earnest consideration. The value derived from such a business is both individual and national, as it adds directly to the wealth of the country as a whole.

With an enlarged market a steady demand is assured, for the export development knows no seasons or artificial boundaries. Prices are not affected by local conditions. As the market is almost unlimited, sufficient business to take the whole or any part of the output is readily secured. Our domestic trade is governed by local conditions, crop, financial and labor, making for periods of intense activity followed by others of depression. These ordinarily would occur in the furniture trade at the same time that other industries are depressed. An export demand, since it is not affected by local conditions, is to be desired in sufficient quantities that the furniture industry in times of local uncertainty will, instead of adding to the general depression, have a stimulating effect, reacting on the trade generally and helping tide over the dull period.

Local and domestic trade is simply living off our-

selves and does not add to wealth of the nation or affect the adverse trade balance we have against us. An overseas business would bring in foreign money, increase the wealth of the country and help correct our adverse trade balance. Such a trade would have a stabilizing effect both on prices and labor, maintaining as it would a steady demand for furniture and for labor.

These reasons may be general, but they apply directly to the furniture industry, and behind it all is the vision of the increased profits that will accrue to the individual manufacturer from the additional business thus brought to our shores.

In view of the foregoing facts the furniture manufacturer should not hesitate to enlarge his plant and



A well-designed C. F. M. china cabinet in oak.

go after all the foreign trade he can secure. He will meet with many knotty problems, but the game is well worth the candle. Think it over. There are no unsurmountable obstacles if one really desires to work up such a connection.

Now that files are at luxury prices, attempts will be made to renew their cutting edges by various methods. Have you ever tried sand and a steam blast?



Finishing room views in Brunswick-Balke plant. On the left rubbing mahogany cases; on the right finishing fumed oak.

Each Man An Expert in One Operation

Progressive Production in Brunswick-Balke Plant—Work Moves Steadily from One Operation to Another, Ensuring Maximum Output and Efficiency

ORGANIZED for efficiency and production, the factory of the Brunswick-Balke-Collender Company of Canada, Limited, is turning out phonographs at the rate of seventy a day, this in addition to their regular line of billiard tables, bowling alleys, billiard and bowling supplies, etc.

The plant at Hanna Ave., Toronto, is housed in a large, well lighted brick building containing 135,000 feet of floor space, and is equipped with a very complete line of modern, labor-saving machinery. The individual electric drive is used throughout, and at present there is in the neighborhood of 175 motors installed. This number is constantly being added to as new machinery and equipment is installed whenever the need arises. This large plant is taxed to the utmost to supply the demand for the Brunswick products, in fact they are forced to import a considerable quantity of material from their American factories. All parts entering into the different lines are manufactured by the Brunswick-Balke Co., in some one of their many plants.

A large stock of lumber consisting of oak, gum, whitewood, chestnut, etc., is always on hand. This material is thoroughly dried in a Grand Rapids kiln before entering the factory. The cars of dry lumber are run from the kilns into the breaking out room. Facilities have been provided for storing the loaded cars on this floor or they may be placed near the swing cut-off saw and the stock started on its journey through the factory.

Up-to-date Equipment Employed

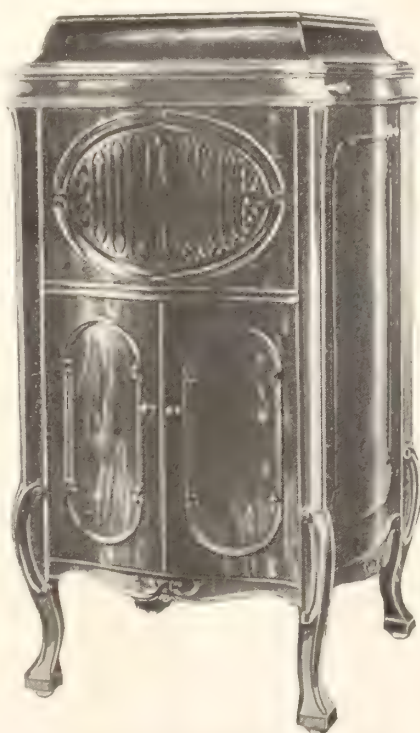
The equipment of the machine room consists of three swing cut-

off saws, two self-feed rip saws, a self-feed jointer, 16" jointer, Linderman machine, 30" Whitney planer with divided rolls, 12" Yates moulder, No. 108, Mattison shaping lathe, 48" Whitney planer, 48" American bandsaw, 30" bandsaw and two combination rip and cross cut saws.

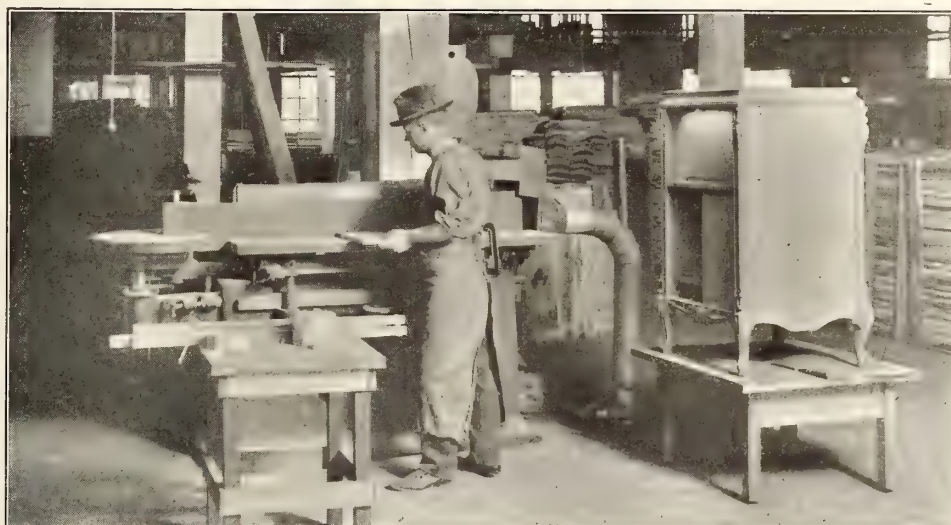
The stock for the bowling alleys, billiard tables, covers and tops of the phonographs is all run through the Yates "108." The material for the cabinet covers and tops is cut to rough length, ripped to width and jointed on one side before going through the sticker. It is then sanded on the back in an endless bed sander (Yates). A form is used for this operation, six pieces being run through at one time. The face of the moulded pieces are cleaned up, after being dampened to raise the grain, on belt sanders. A number of Mattison sanders have been installed for this purpose.

The pieces are now ready for mitering. A special machine manufactured by the Dauber-Bell Company, of Oshkosh, Wis., makes quick work of this operation. This machine is a double cut-off saw with overhead arbors, and is so constructed that the saws may be set to cut at any length and at any angle. The stock is placed on a table which is raised by a treadle and is cut to length and both ends mitered at one operation. The equipment in the cabinet room consists of two Mattison oscillating belt sanders, a number of Mattison hand block belt sanders, a large disk sander, Cowan vertical boring machine, miter saw, two spindle shaper, and three jig saws (two Fay & Egan).

Mr. Choate, superintendent of



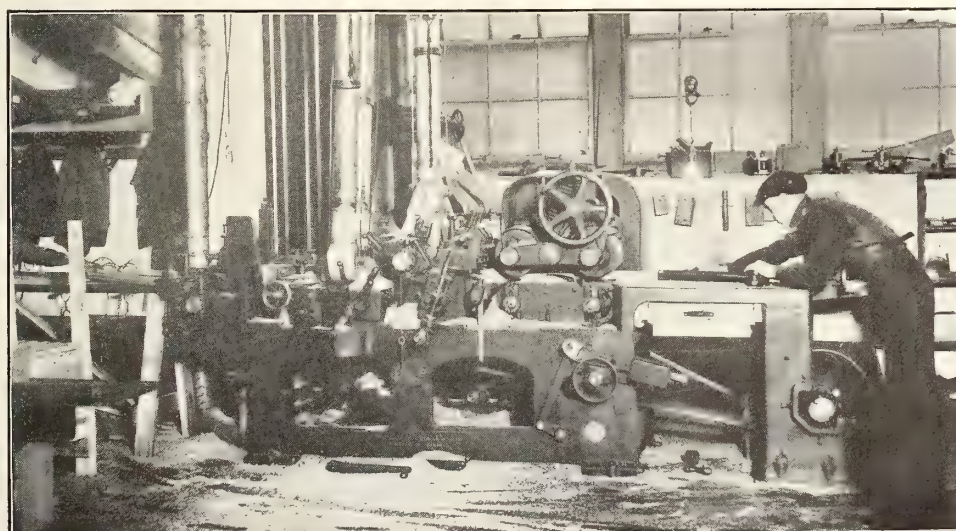
An attractive phonograph—one of the Brunswick line.



Fitting the doors of phonograph cabinets on a Mattison oscillating belt sander.



Fay & Egan jig saws cutting phonograph grills in the Brunswick-Balke plant.



Sticking moulding for phonograph covers on a Yates "108."

the phonograph department, recently re-organized the work on a progressive production basis. Each workman is trained to do one operation and to do it rapidly and skillfully, the work progressing in a steady manner from one to the other. In this way maximum efficiency and production is secured.

Progressive Steps in Phonograph Production

It might be interesting to follow a phonograph through the cabinet room to shipping floor. After all the parts are milled and ready for assembling the first operator clamps the legs on the side panels, and as he lays them down another workman picks them up, and in specially constructed clamps assembles the body of the case. The top end is then cleaned and squared on the large disk sander. The cases now go to a battery of vertical presses where the top is pressed on, tongue and groove joint. The carvings are now attached and the cases cleaned up and passed to the Mattison oscillating belt sander. This machine is used in fitting the cabinet doors. As the cabinets leave the sander a cover is picked up and fitted on and the case is ready for finishing.

When the cabinets reach the finishing room the procedure varies, depending on the finish required. The oak cases, which are fumed, are sponged over, not stained, and placed in the fuming box. After being fumed the light places are touched up to equalize the color, two coats of shellac and a coat of wax are applied and the cabinets passed on for the final assembling.

The mahogany cases are first stained. This is done by dipping them in a vat containing a water stain, slightly warmed. They are then placed in the kiln and when dry are given a wash coat of shellac. This is a very thin coat and tends merely to raise and stiffen the grain so that it may readily be sanded off. The filler is now applied and thoroughly rubbed in and the work again placed in the kiln. Next follow two coats of shellac. The cabinets are now touched up to equalize the color of the different grains and streaks and are ready for varnishing.

Varnish Applied with Spraying Machine

Two DeVilbiss Aeron spraying machines take care of the varnishing. Three coats of varnish are given, the first two are dried over night in the kiln, while the third is kept in for a week. Needless to say, sandpaper is used after each coat of shellac and varnish. The cabinets are now placed in a warm seasoning room, where they remain from ten days to two weeks. This thoroughly seasons the varnish and insures a hard, durable finish.

When taken from the seasoning room the cases are rubbed and polished with fine pumice stone. The side and back panels are done on a rubbing machine, two at a time, and the rest of the polishing is done by hand. To clean off the pumice the cases are placed in a specially designed cabinet and a hose turned on them and then carefully sponged off. They are now passed into the next room for final assembling.

In the assembling room the parts, such as horns, motors, etc., are conveniently stacked, or piled in racks on movable trucks, and the operations performed by different mechanics in the following order. The cover is attached, horn installed, small mouldings fitted into horn opening, grill fitted, racks or record cases installed, motors and tone arms fastened in

place, turntables tested and attached, motor and reproducer tested, cases oiled, polished, packed and sent to shipping room.

The reproducer used is the well-known Ultona, single or dual, and plays all makes of records. It is so designed that the playing angle and weight on needle is readily adjusted to suit the requirements of the different records. The diaphragm is unusually large and this in connection with the oval all-wood tone chamber produces a tone that is noted for its sweetness and purity.

Billiard Tables Important Part of Output

The manufacture of billiard tables is conducted in another part of the building. The core stock for the table rails, legs, etc., is jointed on the Linderman machine and taken to the veneer room, where it is cross banded and veneered, making five ply built up stock. The veneer equipment consists of glue spreader, power press, 12 ft. capacity, veneer jointer, veneer taping machine and a combination rip and crosscut saw. A warming closet is provided for heating the aluminum cauls and a steam jet is located near the spreader and is used from time to time for cleaning off the rolls.

After the stock has been placed in the press and pressure applied, retaining clamps are attached and the whole load is picked up by an overhead carrier and deposited near a shaper. The shaper is used for trimming the edges of the veneered pieces. For the thicker pieces two cutters with collar between are used, while for trimming the edge veneers one cutter and collar. In addition to those mentioned above the following machines are installed on this floor; band saw, swing cut-off saw, 16" jointer, automatic belt sander, 24" planer, vertical boring machine, rip saw, and a Yates endless bed sander.

The finished material is taken from this department to the cabinet room, where it is fitted and assembled by skilled cabinet makers. The progressive system is in vogue here, each man being trained on some particular operation or form of work, but naturally the rate of progress is not so rapid as in the phonograph section. The output of tables varies from 150 to over 200 per month.

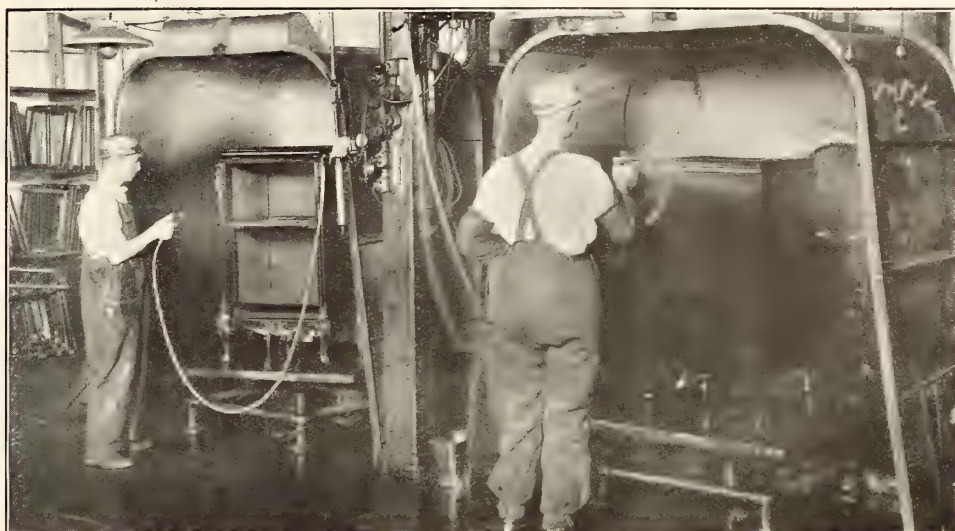
Particular Attention to Finishing

In the finishing room a lot of time and care is put on the tables. The best materials obtainable are used, sufficient time is given for each coat to dry thoroughly and every precaution taken to insure a finish that will be both high class and durable. Each table is completely assembled and tested before being packed for shipment.

A special department is equipped to work up the slates for the table tops. Here specially designed machinery is used to trim, joint and drill the slabs of slate. The slates are then placed on a large bed and roughly trued up, the finish grinding being done after they have been fitted on the frame of the billiard table. The grinding operation is performed on a huge machine resembling a swing arm disc sander, the disc being about 24" in diameter. A very coarse, heavy grade of carborundum cloth provides the grinding medium.

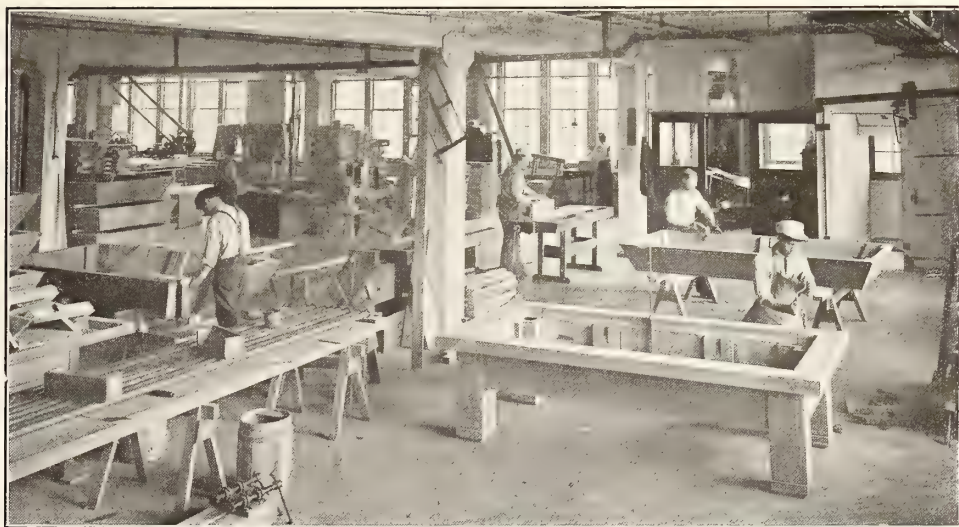
Quality is the keynote of the Brunswick-Balke success, quality in material, workmanship and finished product. This, coupled with fair prices, accounts for the unqualified popularity of the Brunswick lines.

Finishing phonograph cabinets with two DeVilbiss Aeron spraying machines.



Showing billiard tables in the process of finishing in the factory of the Brunswick-Balke Co.

A scene in the cabinet room showing billiard tables in the course of construction.



Quality Furniture Produced in the Coast Province

*Province Furniture Company, Vancouver, Manufacturing High-grade Oak Line—
Enjoy Considerable Trade from Prairie Provinces—Optimistic for Future*

During the five years the war was in progress the amount of furniture made by firms on the Pacific coast was comparatively small. There was a feeling of uncertainty as to future conditions and the industry was in a semi-comatose state. Now, however, that the war is over there is every evidence that business along this line is going to be remarkably brisk, and he would be a wise man who could predict the period during which this activity will prevail. It may be said, however, that, judging by the number of orders that are being received at practically every furniture-manufacturing factory in Vancouver, the period is likely to be a lengthy one.

There is only one firm in British Columbia that handles oak and oak alone in the making of furniture. That is the Province Furniture Company Ltd., of Victoria Drive. Founded some years ago, this concern has passed through different hands, until, at the present time it is in control of men who know the business from A to Z, and who are turning out goods that rank second to none not only on this coast, but in the entire Dominion of Canada. The Province Company is a firm that enjoys an extensive clientele from British Columbia to Manitoba, the high quality of their produce being well-known throughout that stretch of country.

The factory is admirably situated. It is close to the railway and close to the waterfront. A considerable amount of the raw material comes by water and part of it overland, so that its being adjacent to both methods of transportation is a factor that is in the highest degree important from the freightage point of view. The building itself is a framework structure about 150 feet long by 100 feet wide. It is fitted up with the latest machinery, appliances and equipment for the turning out of furniture that will stand the test of public investigation.

As already stated, this factory is the only one on this coast handling only oak and while hardwoods have been and are difficult to obtain at the present time the company have never been held up through lack of material. One of their specialties is suites for dining rooms. These consist of extension tables, chairs, and buffet, and when the representative of

this journal visited the factory he saw in process of manufacture quite a large number of these suites for local delivery, and it may be stated that there is a strong demand for these right now. The fact that there is not so much furniture being sent in from eastern Canada is not, by any means the reason why the firm is rushed with orders, but rather the quality of the goods that are being made.

Not only dining chairs, but chairs of all makes and sizes are being manufactured as well as davenports, buffets, couches, bed-lounges and dressing bureaux. The upholstering department is another feature to which special attention is being devoted, the company doing all this work in its own factory. The decision arrived at by the firm some time ago to manufacture only the highest-grade furniture will never be changed, J. H. Bossoms, the managing director stated. There has never been any idea of entering the field of the cheaper furniture.

To give an idea of the extent of the work turned out by the company it may be mentioned that the average amount of oak used every month is 6,000 feet B.M. This figure is sometimes exceeded but the year round this is the usual monthly quantity.

There are two factors over which the company has no control in speaking of the output. The first is the comparative shortage of raw material and the second is the labor situation. But there are indications that both these will be overcome in due course and in that event, the quantity of furniture manufactured is certain to be substantially increased. While the local market is a profitable one for the firm, it must not be understood that they confine their attentions to it. The larger centres of population in Alberta absorb quite a considerable quantity of the furniture made here, and Vancouver Island is also a steady customer, not to mention the Fraser Valley towns.

The outlook is bright for the furniture industry, said Mr. Bossoms, and though the company's plans for the coming year are not yet complete, it would not be surprising if additions were made to the factory and additional equipment installed to enable the firm to cope with the rush of orders.



Two oak tables from line of the Province Furniture Co., Vancouver, B.C.

Two Attractive Interiors—A Contrast in Setting

Of dissimilar types, but each possessing characteristics of interest to woodworkers, are the illustrations of two attractive interiors published on this page and reproduced from photographs which attracted the attention of "The Canadian Woodworker and Furniture Manufacturer" on a recent visit to The Bromsgrove Guild (Canada), Limited, of Montreal.

The upper view shows the oak panelling carried out in the Music Room of Mr. F. C. Wilson, of Montreal. The design is by Mr. C. J. Saxe, A.R.C.A., Architect, Montreal.



Oak-panelled Music Room in the Residence of F. C. Wilson, Esq., at Montreal. C. J. Saxe, Architect.



Figured Maple Veneer inlaid with Ebony in the New Offices of Messrs. Williams & Wilson at Montreal. C. J. Saxe, Architect.

The new office of Messrs. Williams & Wilson, Inspector Street, Montreal, by the same architect, is shown in the lower illustration. Here the interior woodwork and office screens are executed in figured maple veneer, inlaid with ebony, the screens being glazed with plate glass.

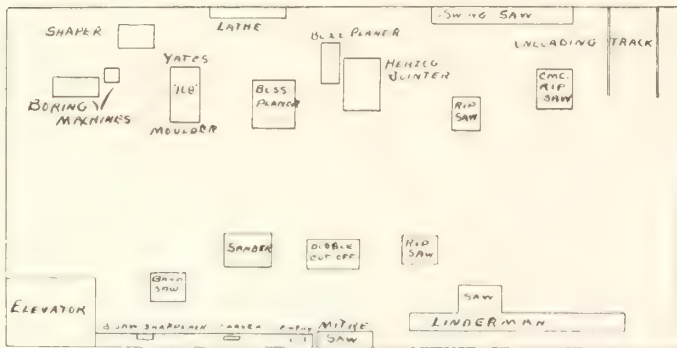
The dignity that attaches to well-designed woodwork, skilfully executed, and in harmony with its surroundings, is here illustrated in a contrast of setting.

Specialization in a Furniture Factory

Chesley Furniture Company Confine Output to One Line—Many Advantages Derived from This Policy—Efficient Utilization of Refuse Eliminates Buying of Coal

AMONG the many suggestions made for successfully coping with the rising manufacturing costs, that of specializing is often mentioned. It has been stated that were the furniture manufacturer to confine his efforts to fewer lines there would be a marked decrease in the cost of production and an increase in output.

It has assuredly worked out in this way in the case of the Chesley Furniture Co., Limited, Chesley, Ont.



Layout of equipment in machine room.

Mr. Durst, the manager, stating that since they confined their output to one line, oak twin-pedestal extension tables, there is less confusion in the factory and the annual balance sheet is much more pleasant to contemplate.

Mr. Geo. Durst, the superintendent, is very enthusiastic over the results achieved through specializing. He found that less time was consumed in changing machines from one operation to another; there were fewer changes to make; fewer parts to keep track of; the men became thoroughly accustomed to the work expected of them—resulting in increased efficiency—and it offered more opportunities for the use of special forms and tools. In fact the advantages of specializing are so pronounced that it is a wonder that other manufacturers have not adopted a similar policy.

Plant Arranged on Production Basis

This growing business is housed in a well-lighted brick building containing 30,000 feet of floor space. The greater part of the lower floor is given over to the machine room, the remainder being utilized for offices and packing room. The equipment, which consists of modern tools, was recently re-arranged to secure an increase in production. Under the new arrangement the men are actually able to produce more, with less effort on their part. The following list will give an idea of the completeness of the plant. Swing saw, C. M. C. power feed rip, rip saw, Herzog automatic jointer, Linderman machine, buzz planer, combination rip and double cut-off saw, three-drum sander, 16" buzz planer, Yates 108 moulder, shaper, boring machine, C. M. C. mitring machine, lathe, automatic back knife lathe, Mattison automatic turning machine, two belt sanders and a number of other smaller machines.

The cars of lumber, from the kiln, are run in and spotted at the end of the swing saw. After being cut

to length it is ripped to width, the power feed C.M.C. rip saw doing the bulk of the work. It might be well to state here that all material is carefully piled on trucks and as the floor is kept clear it is easy to move it from one machine to another. The stock is now straightened on the Herzog automatic jointer and jointed on the Linderman machine. All work for this machine is trued up before being run through, Mr. Durst claiming that one reason some firms have trouble with their Lindermans is that they attempt to joint warped and twisted stock.

The Linderman is used to good advantage and a considerable saving in lumber is effected. Many of the tops are made of solid oak. These are got out square and bandsawed to shape. The piece of waste from the corners are run through Linderman, if necessary, but in any case are utilized for the built-up feet of the pedestals.

A C.M.C. mitring machine offers a labor-saving method of trimming the ends of the rims. The two saws are set in line and both ends squared off at once. In the case of small oval tables, which are made to use up some of the waste, one saw is set at right angles to cut the joint in the side of the rim, the other at a bevel to take care of the end joint.

Work on Shaper Simplified

A very clever centering attachment has been added to the multiple spindle horizontal boring machine. This machine is used for boring the tops and leaves



Herzog automatic jointer in Chesley plant.

for the dowel pins. It was found that a slight variation in the length of the pieces or even a chip or shaving lodging in front of the stock was sufficient to throw the holes out enough to put the table out of line. Now the stock is placed on the table and by

pressing a lever two movable stops centre the work on the bits and any slight variation in length is not noticed.

The shaper is fitted with special collars designed by the foreman, John Hauser. With these all forms are done away with, the work being shaped right from the saw. The idea is a clever one and saves a considerable amount of time.

In the cabinet and finishing room special swivel top stands are provided to facilitate the handling of the work and at every turn an effort is made to eliminate lost motion, excessive handling, and to maintain production at the highest point of efficiency.

The principal finishes produced are fumed and golden oak. The fumed oak is treated and placed in the fuming box, then shellaced and waxed. The golden oak is stained, filled, shellaced and varnished. Two Rockford rubbing machines are provided, one to sand the tops and pedestals, the other to rub the finished work. The varnishing and shellacing is done with a Paasche air spraying machine.

Efficient Utilization of Fuel

An exhaust blower system carries away the shavings and sawdust from the different machines. The blower pipe is taken into the boiler room where a "Y" is inserted and one pipe led to the boiler, the other to the shavings vault. Each pipe is provided with a damper, so that all the refuse may be fed to the boiler or into the vault, as desired. When the plant is running the refuse is fed under the boiler. The feeding of a steady stream of fuel into the glowing firebox seems to increase the efficiency of the combustion with the result that sufficient steam is gener-

mill refuse with a certain amount of coal. This, however, is not the case, for every effort is made to utilize every foot of lumber that enters the plant. The secret seems to lie in the high efficiency of combustion.



Showing solid shaper collars which eliminate use of forms.

It is possible that many plants could run more economically if more attention were given to the efficient utilization of the factory refuse.

Comparison of Moisture Resistance Tests for Coatings

In testing the effectiveness of wood coatings in preventing the passage of moisture, it might be assumed that immersion in water would be much more severe than exposure to moisture-saturated air. Recent tests at the Forest Products Laboratory, however, showed little difference between the two tests for exposure periods up to 17 days.

Five sets of birch panels with various coatings were tested, first by exposure for 17 days to a humidity of 95 to 100 per cent., and later by actual immersion for the same period in water. At the end of these periods, the panels were weighed and the gain in weight taken as the amount of moisture transmitted through the coating.

Relative Severity of Water and Humidity Exposures

No. of specimens averaged	Treatment	Absorption of moisture in grams per square foot in 17 days	
		Water exposure	Humidity exposure
1	Filler + 3 brush coats of rubbing varnish	9.61	7.70
2	Filler + 3 brush coats of spar varnish	12.60	12.24
2	Filler + 3 brush coats of spar varnish B	19.58	18.82
2	Filler + 3 brush coats of spar varnish C	17.04	12.42
7	Filler + 1 coat of rubbing varnish + 1 coat of rubbing varnish size + aluminum leaf + 2 coats of spar varnish	.59	.45

If the tests were continued for much longer periods, it is possible that the absorption would be considerably greater by the soaking method, on account of injury of the coating by the water.

It is not what you claim for goods that gives satisfaction to the customer, it is what the goods prove when in use.



Paasche Air Brush in finishing room, Chesley Furniture Co.

ated to run the plant without having to resort to coal. In fact they find that in addition to raising all the steam required they have a certain amount of wood cuttings to dispose of.

It has been suggested that there is a lot of good material being wasted or they would not be able to generate sufficient steam without supplementing the

Heading on card used for tabulating costs.

corded on the stock bill. This is taken, the percentage of waste added, and the amount charged at the current cost, the same with the mirrors, hardware, trimmings, glass, etc. The amount of finishing material, the lumber and other stock used in packing is known and charged up the same way.

When these items are totalled up and the percentages added for overhead, etc., an accurate estimate of the cost of the lot is secured. By dividing by the number of pieces made the cost per piece is arrived at.

A new system of time keeping is being introduced. The machines are each given a number and all the individual operations, such as ripping, planing, sanding, tenoning, etc., have individual numbers. Inter-

reduce the cost. It would also indicate where the cost of production might be materially reduced.

Life-Like Carving Baffles Spectators

Japan, it seems, may well lay claim to be the home of the champion wood carver of all time in the person of Hananuma Masakichi, of Tokio. He has carved a figure in wood so like himself that when the two are placed side by side it is said to be almost impossible to tell which lives and breathes and which does not. By several experts in art this wooden figure has been pronounced the most perfect and human image of man ever made. Masakichi has faithfully reproduced every scar, vein and wrinkle to be seen on his body.

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Reverse side of cost card.

national time recording clocks have been placed at convenient points throughout the factory and special time tickets provided. The workmen fill out a ticket giving name, machine number, operation number, number of pieces finished and number of pieces still to finish, for each individual operation, and stamps the time started and time finished on the clock. The tickets are turned into the time keeping department and entered up.

This system may be a little more elaborate, but it gives an accurate check on the work done by each employee and in addition shows in detail the cost of the individual operations. If certain operations are costing more than they should steps can be taken to

The figure is composed of 2,000 pieces of wood, dovetailed and jointed with such skill that no seams can be detected. Tiny holes are drilled for the reception of hairs, and the wooden figure has glass eyes and eyelashes in which no dissimilarity to Masakichi's own can be observed. The Japanese artist posed between two mirrors while modeling this figure and for some time after its completion he posed frequently beside it, to the confusion of spectators, who were often entirely at a loss as to which was the artist. The figure stands with a little mask in one hand and an instrument for carving in the other; the lifelike eyes are apparently gazing at the mask, and the face wears a look of intense absorption.

Humidity—Its Relation to Furniture Making, etc.

By John Welmers.

Humidity is a word often heard but not much thought of, especially with reference to the manufacturing of furniture. But lately it has been the subject of much investigation and experimenting, for the size and shape of a piece of wood will change with the changes in the humidity.

Humidity is spoken of in reference to the state of the atmosphere, but does not specify the amount of

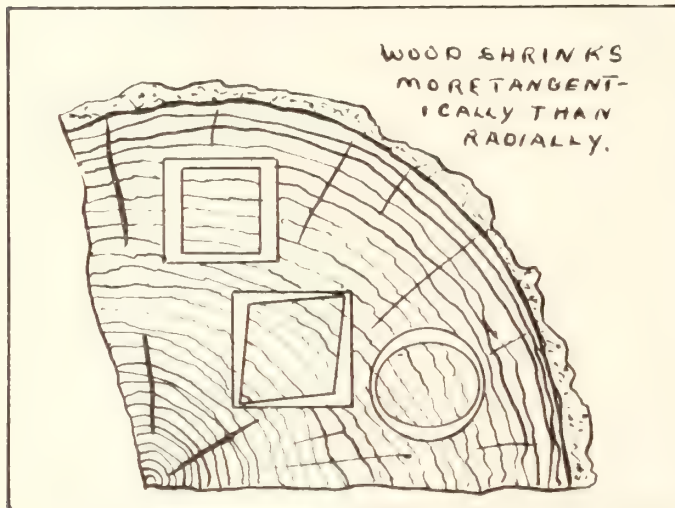
recording the heat and humidity in the kilns, but how about the factory? It is assumed by some that if the wood has been properly dried it will remain so, but that is not so, although it will remain better than if it had been imperfectly dried and was case-hardened and full of strains, but the fact remains that wood changes with changes in humidity, so it is proper that the conditions should be met and considered as the case requires.

Some factories have taken a long step in the right direction by humidifying the plants or parts of the plant, and they feel well repaid for their efforts. Of course it may be unnecessary to humidify all the departments for some departments are already nearly ideal. The machine-room, for instance, with the numerous sawdust blowers may be found ideal most of the time, for the air changes constantly, which might make it quite hard to humidify if it were desirable. The cabinet-room, if it has steam-heated glue pots, may already be humidified, and the humidity also regulated by adjusting the steam jets. So it is obvious that each factory must be studied and dealt with accordingly.

Provided all the wood entering a factory had been properly kiln-dried and equalized, how much time and trouble would be saved. Then if the wood could be kept constant in moisture content (and it can) all the way through the factory to the packing room, what a good chance there would be to give the repair men some real work to do instead of repair work.

How to Test for Humidity

There are different methods of humidifying a factory and several types of humidifiers are now on the market. There are also home-made humidifiers giving entire satisfaction. A good check of the moisture con-



Illustrating how stock shrinks more one way than another.

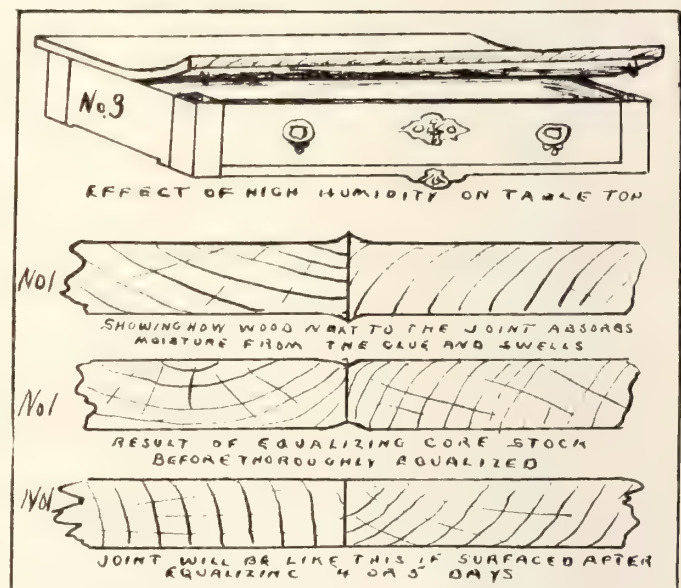
moisture the air may contain, so when referring to the amount or percentage of moisture the air contains, we speak of relative humidity. Relative humidity means the ratio of the amount of moisture in the air to what it might hold at that temperature. For example, at 130° F the air can hold 45 grains of moisture per cubic foot when fully saturated, but if it has only 30 grains per cubic foot, it is only 2/3 saturated, or has a relative humidity of 66.2/3 per cent. as compared to 100 per cent. when fully saturated.

Relative humidity is determined by means of a hygrometer, of which there are two kinds, the hair hygrometer and the wet and dry bulb hygrometer. The hair hygrometer is of little value for it is inaccurate, but the wet and dry bulb hygrometer is used almost entirely when the exact relative humidity is desired.

Recognized in Dry Kiln Operation

The wet and dry bulb hygrometer consists of two thermometers placed side by side on a panel. One of them, called the wet bulb, is enclosed in a wet wick. The temperature of the air causes evaporation of water from the wick. The amount of evaporation is controlled by the humidity, and the lower the percentage of humidity is, the faster the water evaporates. The evaporation of the water causes a decrease in the temperature of the wet bulb. The difference between the wet and dry bulb readings together with the reading of the dry-bulb thermometer, enable one to figure the relative humidity. The modern dry kilns are probably more thought of in connection with relative humidity than any other branch of the furniture industry, for the simple reason that it is absolutely necessary to control the humidity if the wood is to be dried correctly.

All sorts of devices are made for controlling and



Moisture affects all stock and must be considered.

tent of wood in various departments and at various times is to dry pieces of wood, preferably strips of end grain wood, and cut them so that they will weigh exactly 100 units, either grains, tenths of ounces, etc. Then place them wherever desired, and when the pieces are to be tested, all that is necessary is to weigh the samples, and whatever the weight is above

the 100 units used, that will be the moisture content based on its dry weight. For example, if the sample weighed 109 grains it would contain 9 per cent. of moisture, providing the dry weight of the sample was exactly 100 grains.

The Forest Products Laboratory at Madison, Wisconsin, has demonstrated the fact that wood swells more tangentially than it does radially, as shown in the accompanying sketch, so it might be well to take that into consideration when making articles where the swelling of the wood is less important in one direction than the other. The reason for this swelling lies in the fact that the medullary rays (plainly visible in quartered oak) prevent the wood from swelling or shrinking, for these rays are small strips of fibres

on leaving the jointer, all goes well, but what happens when either of the two goes to the dry-room for a few days. Open joints! you exclaim, but don't blame the jointer-man, or the glue-man, nor even the glue, for case-hardened wood is sometimes stronger than glue. Blame it on improper equalizing and probably poor kiln-drying. If the trouble does not arise when the stock leaves the drying-room, it may develop during the finishing process, or worse yet, it may show up when it is peacefully located in a good customer's home, and if your trade mark is on the article, as it should be, you will undoubtedly hear from it then.

"Is it absolutely necessary to dry glued-up core-stock? you ask, and inevitably the answer is "Yes," if you intend to use it where it shows, as in the tops, ends, or large bed panels, for the wood next to the joint has absorbed some moisture from the glue and has swollen slightly. Experiments show that it takes from three to five days to equalize the joints in 4/4 or 5/4 stock.

A room having a temperature of 120° F and a humidity of 36 per cent. will dry the wood down to 6 per cent. but no lower. If 5 per cent. moisture content is desired, 120° with 30 per cent. relative humidity may be used. The room should have a good circulation or your purpose may be defeated, for it is necessary to reach all the wood and carry away or evaporate the moisture as it appears on the surfaces. Needless to say stickers must be used between the stock.

Finishing Room Should Receive Attention

Some finishers have long clung to the theory that once the filler, shellac, varnish, etc., had been applied, the danger of warping, shrinking, swelling, etc. was eliminated. That theory has been exploded. Almost everyone has seen furniture go to pieces because the moisture had either dried out or else penetrated the wood through the varnish and made it swell or shrink enough to break the glue joints. In view of this fact would it not be advisable to control the heat and humidity in the finishing rooms and varnish driers to keep the moisture content of the wood beneath the varnish in harmony with the moisture content of the wood before it entered the finishing room? Trouble often arises because this fact is overlooked.

The illustration here shown is an interesting example of the way the humidity in different climates affects some furniture. This table was made under conditions where the wood contained approximately 6 per cent. of moisture. The top had been coated on the underneath side with one coat of paint, while the top side had stain, filler, shellac and varnish on it, so naturally the bottom side absorbed moisture first and swelled, causing the warped top. If the both sides had been coated the same, the chances are that it would merely have swollen and probably pulled the post away from the end. The only way to prevent swelling under these conditions is to coat the wood with aluminum leaf, and that is impractical. If the article had been made under conditions which would turn it out at the same moisture content that it finally reached, the trouble would also have been eliminated.

So it can readily be seen that in order to avoid trouble and prevent delays in the manufacture of furniture, it would pay to study up on this question and keep in step with those who are already started.

If you are satisfied to jog along in the rut I don't say you may not live a contented, comfortable kind of life, but you will never be any great success.



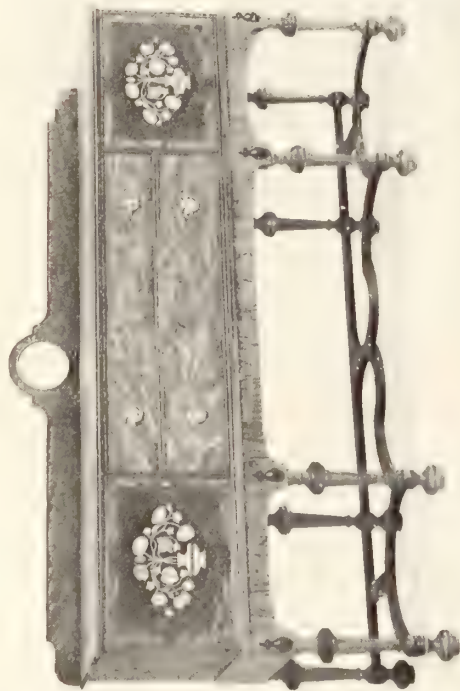
A well-proportioned china cabinet in Spanish Renaissance style. One of a line by the Anthes Furniture Co.

of wood radiating from the centre to the outside of a tree.

You might ask what would be the benefits of kiln drying and equalizing the wood for furniture. If you have ever noticed a machine hand try to rip a piece of case-hardened wood, as compared with ripping a piece of wood free from stresses, you would say "Proper kiln-drying and equalizing for this factory from now on."

Eliminating Open Joints

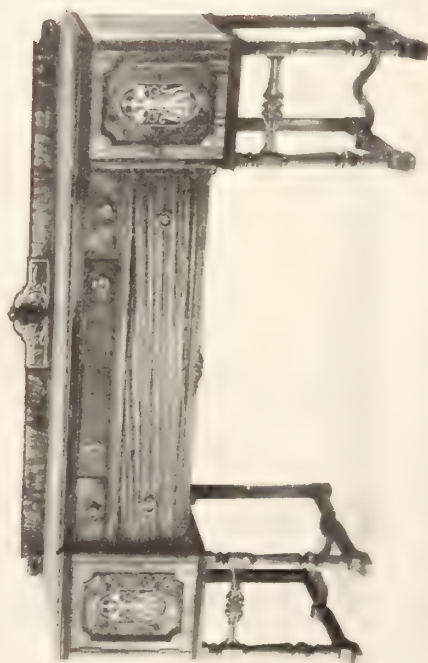
In the second place let us consider the after-effects of machining stock with stresses. A joint in the core-stock, for example, may be perfect when leaving the jointer, but if it stands for a few days, gradually equalizing, you will notice it takes a little more force to squeeze it tight when gluing. If it had been glued up



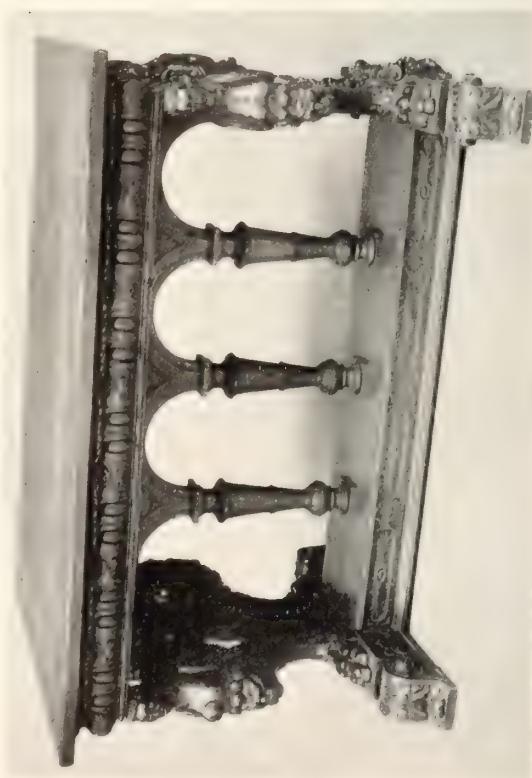
William and Mary buffet in walnut, flowers are inlaid in other woods.



An attractive period buffet in walnut.

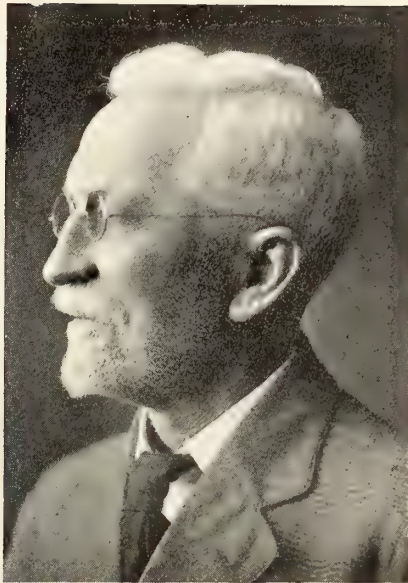


Beautiful quarter sawed walnut buffet, modern rendering of Italian Renaissance style.



Carved walnut table of French design about the 16th Century.

Courtesy, American Walnut Manufacturers' Association, New York.



J. W. Kilgour, J. W. Kilgour & Bro., Ltd.,
Beauharnois, Que.



W. T. Gibbard, Gibbard Furniture Co., Ltd.,
Napanee, Ont.



Daniel Knechtel, Knechtel Furniture Co., Ltd.
Hanover, Ont.

Fathers of the Furniture Industry

Outlining Careers of Some Early Manufacturers—The President of One Large Company was Glad to Earn Fifty Cents a Day, While Another Successful Manufacturer Received Twenty Dollars for First Year's Work

The manufacturer of furniture for the home, in all probability ranks with agriculture as being one of the oldest industries in existence. Archeological records which have been unearthed in various countries bear witness to the great antiquity of this calling. In Canada however it is of comparatively recent origin and it is only of late years that it has taken its place as one of the leading industries. To-day it gives employment to thousands of workmen and the value of the furniture produced in the various centres runs into millions of dollars.

One wonders if the early furniture maker who in a small way catered to the needs of the pioneer settlers ever, even remotely, realized that from such humble beginnings as his would rise the great structure of the Canadian furniture industry.

In the early sixties and seventies the work was practically all done by hand as at that period machinery was little known and little used. The furniture produced differed widely from the dignified, tasteful furniture that is now being made. It was characterized by its size and heaviness of design and by the elaborateness of the carvings and scroll with which it was ornamented.

The development both in design and methods of production was a very gradual one. As machinery was invented and placed on the market the design was slowly changed to suit the requirements of the newer methods of manufacture. With this progressive evolution we find new enterprises starting up existing factories being enlarged and extended, until to-day we have a large number of furniture factories housed in modern buildings, equipped with up-to-date labor-saving machinery and turning out fur-

niture at a rate that would be almost unbelievable to the older manufacturers who were not able to follow the development in furniture making which occurred as the industry expanded.

A survey of the furniture field reveals few of these older furniture makers actively engaged in catering to the requirements of the present generation. A few have drifted into other lines, others have taken up their residence in other countries, while some have passed into the great beyond.

Among those who are still interested in the furniture business W. T. Gibbard of the Gibbard Furniture Co., Limited, Napanee, Ont., has the unique distinction of being the premier pioneer manufacturer. In 1835 John Gibbard began making fanning mills, coffins and furniture. The furniture gradually took precedence and the other lines were dropped. In 1862 W. T. Gibbard was taken into partnership and the business conducted under the name of J. Gibbard and Son.

It was a slow up-hill struggle against adverse circumstances. Between '62 and '92 three disastrous fires occurred. Very little insurance was carried so these losses meant beginning over again financially.

After the last fire, which occurred in the fall of '91, a joint stock company known as the Gibbard Furniture Co., Limited, was formed and the brick factory which was erected then is, with changes and additions, in operation to-day. W. T. Gibbard was appointed manager of the new company, a position which he held until he retired in 1909 and was succeeded by his son G. W. Gibbard.

Mr. Gibbard stated that in the early days black walnut was very popular and carving and fret work

was not stinted. The prices charged compared very favorably with those being received to-day. In the '80's parlor suites brought from \$100 to \$175, side-boards \$60 to \$110 and large upholstered chairs from \$40 to \$70. It would not look as if the general public have any reason to grumble at current quotations.

Probably next in point of service is J. W. Kilgour of J. W. Kilgour & Bro., Limited, Beauharnois, P. Q. Mr. Kilgour was born in that city in 1843 and at the age of fifteen entered his father's cabinet shop and served his apprenticeship. He opened up a shop and commenced producing furniture in '63. A few years later he took his brother into partnership and in '70 they put in a steam plant. About the year '76 his brother moved to Morrisburg, Ont., and Jas. Wilson became a partner and the business continued under the same name, J. W. Kilgour & Bro.

Mr. Kilgour has devoted his whole life to furniture making and though over seventy-six years old is at it daily. He enjoys the best of health and expects to have the pleasure of celebrating the 60th anniversary of the founding of the business.

Incorporation papers were taken out in 1910 under the title J. W. Kilgour & Bro. Limited. From the small beginning, in '63, the business has expanded until to-day it is one of the largest of its kind in the Province of Quebec.

Fifty cents a day would not be considered by a twentieth century workman, more especially if the hours were from sun-up to sun-down, yet Daniel Knechtel, founder of the Knechtel Furniture Co., Limited, often worked for that when he first went to Hanover in 1864. He had learned the trade of carpentering and in '66 with his brother Peter he began making furniture by hand for the settlers. Two years later they purchased a sawmill. This they worked at night carrying on the making of furniture during the day. Three years later, '73 to be exact, a small steam plant was secured and about a dozen men were employed on furniture.

The following year a new building was put up,

additional equipment added and the pay roll increased to about twenty. The business increased and expanded until in '84 a larger brick factory was erected.

The Knechtel Furniture Co. was formed in 1887 and incorporation papers taken out in '91. The expansion was very rapid from this time on. The Southampton Mfg. Co., Limited, was incorporated in '95, and '99 saw furniture being made in Walkerton under the name of the Seiling Furniture Co.

The Hanover plant was completely destroyed by fire on Dec. 20th, 1900. Nothing daunted a bigger and better plant was planned and was formally opened on Dec. 20th, 1901, just one year later. In the meantime the independent plants at Walkerton and Southampton were taken over and incorporated with the Knechtel Furniture Co., Limited. Mr. Knechtel is still actively interested in the furniture company though most of his time is devoted to managing his large cement mill at Hanover.

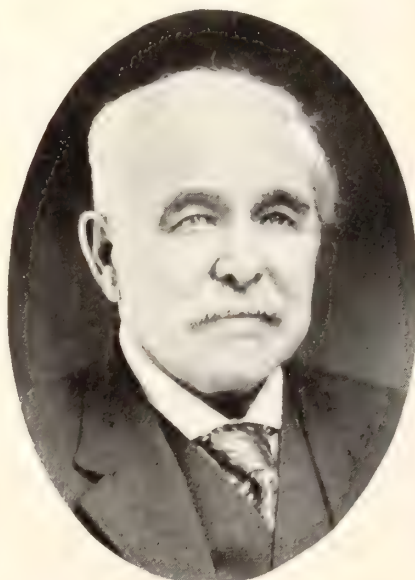
It is a strange coincidence that three of the early manufacturers were born in the same year—1843. They are J. W. Kilgour, Daniel Knechtel and Thos. Bell. Mr. Bell hails from Belfast, Ireland. He served his apprenticeship with the cabinet making firm of Bain & Hay, Woodstock, Ont. This was during the period of the Crimean war and conditions were very bad in Canada.

When we look back and think of the wages paid at that period we wonder how the mechanics existed, let alone saved any money. The wages Mr. Bell received for his five years' services included board and were as follows—1st year \$20; 2nd \$30; 3rd \$40, and 4th \$50, and for the fifth year he received the magnificent sum of \$80 and board.

He commenced manufacturing furniture at Seaforth, Ont., in 1868 in connection with the T. H. Broadfoot planing mills. This business was disposed of to Scott & Sparling in '75 and Mr. Bell moved to Wingham, manufacturing there under the name of Thos. Bell & Son Co. When this firm was taken over by the Canada Furniture Mfrs. Ltd., he and his son,



Thos. Bell, Bell Furniture Co., Limited,
Southampton, Ont.



James Wilson, J. W. Kilgour & Bro. Ltd.,
Beauharnois, Que.



Henry Peppler, Peppler Bros. Limited,
Hanover, Ont.



D. Hibner, D. Hibner Furniture Co., Ltd.,
Kitchener, Ont.



James Baird, Baird Bros., Plattsville, Ont.



J. G. Hay, North American Bent Chair Co.,
Ltd., Owen Sound, Ont.

H. O. Bell, remained with the C. F. M. for seven years.

Later in 1907 Thos. Bell and his two sons, Henry O. and Chas. M., bought the plant of the Southampton Manufacturing Co. and formed the Bell Furniture Co., Limited. He is still actively engaged in producing fine furniture.

When the Knechtel Furniture Co. was formed in '87 Henry Peppler was one of the principal shareholders. He had previously been working for Mr. Knechtel having entered his employ in '73. Mr. Peppler severed his connection with the above mentioned company in 1911 and next year with his three sons he organized the firm of Peppler Bros. Limited, becoming its president. A modern furniture factory was erected the same year and equipped with the latest labor-saving machinery. Equipment and layout had been a hobby of Mr. Peppler's for years and he used all his knowledge and experience in planning the new plant. The business has outgrown its present building and an extension is contemplated for 1920.

The early forties seem to have produced quite a number of furniture men. In addition to the three mentioned as having been born in '43, James Wilson was born in '44 at New Edinburgh, Ont. Shortly after his family moved to Beauharnois, P. Q., and he has resided there ever since. He has been a member of the firm of J. W. Kilgour & Bro. since 1876 and still takes an active part in its management.

Mr. Wilson is greatly interested in education and devotes a great part of his time to the local school. He has been a trustee since '76 and President of the board for the last forty years.

Forty-two years ago or to be more specific, in 1877, D. Hibner and H. Krug bought the business of Zeigler Bros., Kitchener, Ont. The business was conducted as a sash and door factory until '82 when a line of couch and sofa frames were made. This was quickly added to and in '84 the following furniture was being manufactured: extension tables, bedroom suites, elm and walnut, sideboards and hall racks. About fifteen hands were employed at this time.

Mr. Krug withdrew from the partnership in '87, the business being continued by Mr. Hibner under the name of the D. Hibner Furniture Co. Two years later a factory was erected on the present site and employment was provided for forty-five hands. This plant was completely destroyed by fire on Nov. 12, 1899, and on Dec. 22nd of the same year the plant had been rebuilt and was in operation. Since then one addition after another has been made until to-day the floor space is in the neighborhood of 135,000 square feet, and in addition a chair factory is in operation at Listowel. About 220 hands are employed at the Kitchener plant.

When compared with some of the dates that have been referred to 1879 seems comparatively recent. That is the date that Sauer & Baird Bros., now Baird Bros., took up the work of furniture manufacturing and Jas. Baird has been actively interested in the affairs of the company since its formation, just forty years in harness. Mr. Baird was born at Chesterfield, Ont., near Plattsville, in 1852. He resided in Stratford five years, in England one year and in Brantford five years, going to Plattsville in 1879. It was here that the making of furniture claimed his attention. The firm as originally organized was Sauer & Baird Bros. Mr. Sauer retired in 1889 and the business was conducted as Baird Bros. Chas. Baird died in 1901.

Since his brother's death Jas. Baird has been sole owner of the business. He is deeply interested in the welfare of the industry as a whole and takes a very active part in the affairs of the Furniture Manufacturers Association, acting as treasurer for many years and having served two terms as President.

One seldom thinks of the North American Bent Chair Co., Limited, of Owen Sound, without thinking of J. G. Hay. He and his company seem to be inseparably linked together. Before settling down in Owen Sound Mr. Hay had rather a varied career. Born at Woodstock in 1855, when quite young he was attracted to Chicago by the high wages being paid, probably all of \$1 per day, at the time of the big fire.

He roamed around quite a bit and worked in several of the American furniture factories.

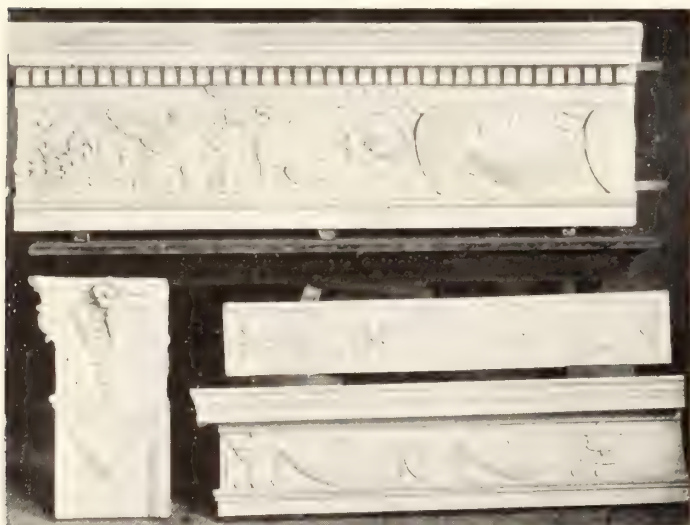
When 21 he headed for San Francisco entering the employ of the West Coast Furniture Co. He stayed there a year then went to Los Angeles, from there to Portland, Ore., where he opened a turning business. Later he went to Walla Walla, Wash., and entered into partnership with Dovell & Johnston, who were making a small line of furniture.

He returned to Woodstock in '79, having disposed of his interests at Walla Walla, and went in with his father and brother who at that time were manufacturing furniture.

Wishing to engage in business for themselves he and his brother, the late Archibald B. Hay, went to Owen Sound and organized the North American Bent Chair Co., Limited. That this was a successful undertaking is evidenced by the fact that it has developed into a business occupying 260,000 feet of floor space and with a daily capacity of 2,000 chairs. The Hay brothers were instrumental in organizing the National Table Co., Limited, The North American Furniture Co., Limited, and the Owen Sound Chair Co., Limited.

Wood Carving Models

The illustration shows wood-carving models executed in clay which the Bromsgrove Guild, of Montreal, have made in connection with their contract for the panelling in the dining-room at the Toronto Union Station. This panelling is to be executed in American white oak. The uppermost detail in the illustration shows a portion of the main frieze; in the



Wood-carving models for oak panelling—Toronto Union Station.

lower left-hand corner is a detail of the pilaster caps, and the remaining two details are models for the pilasters to doorways and for doorhead. Messrs. Ross & Macdonald, and Hugh Jones, of Montreal, and Mr. John M. Lyle, Associate, of Toronto, are the architects.

At a meeting of the Furniture Manufacturers' Association held in Toronto on November 14th it was decided to appoint a committee on tariffs and a committee on labor. The duties of these committees are to gather information and to act in an advisory capacity to the Association.

Managing Director of the Bromsgrove Guild

THE application of architectural training to the practice of the woodworking crafts is by no means uncommon, but it is exemplified par excellence in the Managing Director of the Bromsgrove Guild (Canada) Ltd., Mr. E. L. Wren, of Montreal, who is a qualified architect, and, indeed, an Associate of the Royal Institute of British Architects of Great Britain.

Born in old London, in 1885, Mr. Wren served his articles with a firm of architects in the city of Leicester. He entered the service of the Bromsgrove Guild of Applied Arts as a draughtsman in 1907, and eventually took over the management of their woodworking department. Here it was found that the furniture made for Canadian clients was affected by the severer climatic conditions on this side of the water, and so



E. L. Wren, Managing-Director of the Bromsgrove Guild (Canada) Limited, Montreal, Que.

in 1910 it was decided to start a Canadian branch in Montreal, of which Mr. Wren was to have charge.

Mr. Wren came to Montreal and organized a separate company under a Dominion charter. He at once acquired the cabinet-making plant of Felix Routhier, and later the carpentry business of Jos. Binette, thus laying the foundations of the firm's present up-to-date establishment.

In his concentration upon the exacting requirements of special orders for high-grade work, Mr. Wren has been eminently successful, as will be gathered from the illustrated description of the products of the Bromsgrove Guild factory published in this issue. Among the contracts upon which the Guild is now working is one for the special furniture for the Parliament Buildings at Winnipeg; another is for the interior woodwork for the new Union Station at Toronto, this including all the interior modelling for wood, plaster, iron and bronze, and marble.

Mr. Wren has been a personal factor in placing the Bromsgrove Guild in the front rank of the industry. In his combination of the artistic with the practical—of the architect and the supervisor of manufacturing detail in the higher grades of woodwork—he is peculiarly happy.

Which Makes the Best Glue Joint?

Many Different Forms In Use—Wedge-Shaped Offers Slight Advantages—Straight or Hollow—Hollow Joint Not Favored On Automatic Glue Jointers

By Mechanic.

I am often asked the question: Which is the best joint for glue work? Now this can be answered in a good many ways, and still it cannot be answered at all, as far as a hard and fast rule is concerned. For the fact remains that there are a number of styles of joints that are equally good so far as results go, and therefore the answer in most cases will be found to be the preference on the part of the questioner for some particular style.

As a rule, the man who has given the matter any thought will usually find some shape from among a number of different styles that particularly appeals

into place, owing to the taper. In this way it will be a great deal easier to clamp the stock. For this reason the style shown at Fig. 8 is not a good joint for gluing as the square corners will hang onto the edges of the groove, and in addition to making it difficult to enter, slivers are likely to break off the corners, become wedged in the groove and keep the edges from coming together snugly. The accompanying sketch shows a number of different styles, almost any of which will make equally good work if properly made.

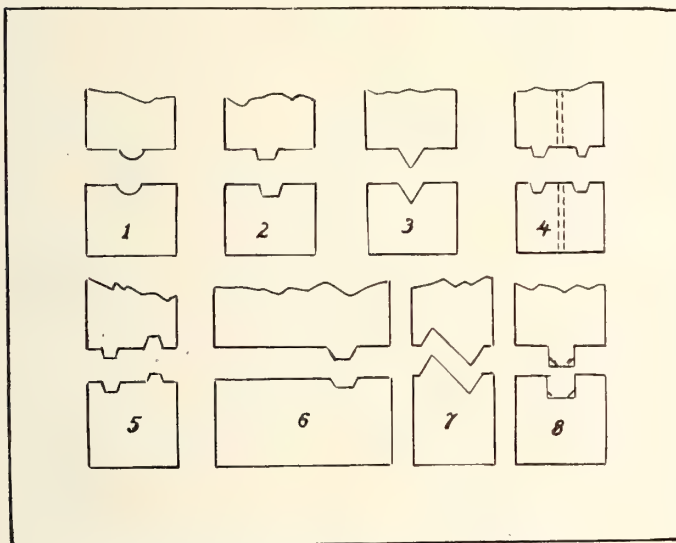
A square joint properly made with good glue will break at the side of the joint, in the solid wood, before it will break at the joint. As a consequence, in using the lock joint it is not so much the strength it will add to the work as the ease and rapidity with which the stock can be handled in gluing up that should be considered, enabling the workman to get one face side to the boards always without having to take up time hammering the edges to get them flush.

The first illustration is a very good joint and will pull together nicely in gluing as there are no corners to hang. Fig. 2 is a very popular shape and is what is known as the standard "V" joint. There are probably more of this pattern in use than any other one shape, it pulls together so readily. No. 3 possesses the advantage of pulling readily into place, but owing to the sharp corner it is very easy to sliver off, and it bruises very readily on soft wood, even in handling, if care is not exercised. No. 4 is a very good pattern to use where it is necessary to resaw the stock after gluing for panels, drawer bottoms, etc. The saw cut comes between the tongues, leaving one in either piece.

Double Tongue for Resawing

The thickness between the tongues must be determined according to the thickness of the stock to be worked, so that they will come as near as possible in the centre of the finished panel. In this case the cutters are ordered as desired. No. 5 answers the same purpose as No. 4, but carries a tongue and groove on each piece. This particular style has its disadvantages in the fact that it requires just the length of the tongue more in lumber on each joint than would be the case were the tongues both on the same piece. Its advantage is small, if any, over No. 4. The sixth sketch shows the joints used by chair factories that want a lock joint. The lock is set to one side of the stock instead of the center, so they can then saddle the seat on the heavy side and not cut into the lock. Fig. 7 shows one of the great many different shapes that are sometimes used. It answers the purpose all right; in fact it gives more glue surface, but it requires considerably more lumber and it is a question as to whether the advantages to be gained will offset the extra stock required. No. 8 shows a square tongue that is bad to hang, as already referred to, but when it is made with slightly rounded corners, as shown by dotted lines, this objection is overcome.

As before stated, any shape will make a good glue joint if properly made and glued, but different men



Illustrating forms of glue joints in common use.

to him if he be shown a number of styles to select from. Some people hold that there is nothing that will equal the ordinary flat or square edge joint, the kind that could be cut with a flat knife on an ordinary hand jointer. Most of the manufacturers who make glued work concede that some kind of a lock joint, or tongue and groove is to be preferred. There are advantages to be obtained from the use of the lock. The writer uses the word "lock" in this case merely to designate edges that have some form of projection on the one piece and a corresponding recess on the other, and applies to either the "V" shaped tongue, square tongue or bead that are not to be had with the square edge. For instance, if we have one straight board and one alongside that is not straight, with the lock joint they will be readily brought to a face on one side and one will be able to clean up one side with a very light cut on the planer, while some trouble will be experienced and also extra time required to get the square edge joints to face up on crooked stock.

Advantages of Wedge-Shaped Lock

It is advisable to use a lock that is wedge-shaped or rounding on the sides so that when the boards are brought together and the tongue gets started at any one place, along its length, when the pressure is applied with the clamps, it will be inclined to slip or pull

have different ideas, and the shape you will use is in the end simply a matter of opinion. If it were a matter of direct pull or stress laid directly in line with the edges tending to pull them straight apart, it is still a question if one would be really stronger than another.

One thing that is more important than the shape you use on the edge is the quality of the work. You must have smooth work and a straight edge in order to get good strong joints with any shape. Another point that comes in, in the making of joints, is the matter of the edges being straight their length, or being slightly concave or hollowing in the center. Some people claim that good work cannot be had unless the joint shows hollow before it is clamped, yet I venture to say there are plenty of factories making straight joints that are certainly getting good results.

In making joints the old way, that is on the hand jointer, it is doubtless a good idea to have them slightly hollow, but I consider it more as a precaution than a necessity. The idea being that if slightly hollow

the clamps will easily bring them together and you know the ends will be up, while if you attempt to make a perfectly straight edge on a hand machine there is a possibility of variation in the wrong way so that the edge may rounding. This would show an open joint at the ends. If the machine is set to make them hollow there is room for a slight variation and still not get the edge rounding. If it were known that straight edges would always come off the machine I dare say that even the advocates of hollow joints would prefer them.

The users of automatic glue jointers do not hold that a hollow joint is necessary in order to turn out good joints, but if these people had to use a hand jointer they would doubtless make hollow joints, not because they consider it necessary, but simply to be sure of getting an edge that would clamp up at the ends, something which a straight joint will always do. In conclusion, I may state that although my remarks have been somewhat rambling I hope to have made not a few readers of the Woodworker a little the wiser.

The Successful Drying of Oak Lumber

Quality of Output More Important Than Time Required—Careless Piling Responsible for Part of Loss—Conditions of Stock Governs Changes in Temperature and Humidity

By H. A. Ralph.

I have been requested to describe in detail the method followed in regulating our kiln and drying our lumber. This is a pretty big contract, as we vary the treatment for the different kinds and thicknesses of lumber, as well as make allowances for the condition of the lumber when it enters the kiln.

To attempt to cover the whole field in one short article is out of the question, and I am afraid that were I to do so those who happen to read this article would in all probability say, "well, he did not tell us anything new, we knew all that before he started."

Oak is a wood that is used to a large extent in the different furniture factories and is one of the woods that gives a lot of trouble in the kiln. I decided that I would tell how to treat this stock in the hope that some of the readers might benefit by the ideas outlined.

Two, Main Factors in Kiln Operation

There are two things I want to emphasize before entering into details, and they are piling and the time factor. I am a crank on piling, and believe that nearly as much stock is injured by careless piling as by faulty drying methods. For this reason I insist that sufficient time is taken to pile the stock properly. I have had the sticks surfaced so that they are all the same thickness, and see that they are placed exactly above each other. Sometimes with thick lumber I space the plank wider at the bottom of the car. As far as possible we try to load a kiln car with one length of stock which enables us to place a stick at each end of the lumber so that there are no ends hanging over. The result of this additional care is that the stock comes out straight and flat instead of being full of kinks and bends.

We do not aim to see how quickly we can dry our lumber. If we place 10,000 feet of oak in a compartment that stock is worth anywhere from \$1,500 to \$2,500, and it does not seem worth while risking the whole of that lumber or even a part of it to gain a

day or two. Consequently our aim is to dry it as quickly as possible without taking any chances of injuring the stock. The condition of the lumber is our guide, not the time consumed.

We will say that the stock to be dried has been piled outside for about six months. After the kiln has been loaded the first treatment is the steaming. We have a fairly positive circulation and find that about twelve hours steaming at about 110 degrees temperature gives good results. Sometimes we close it off at eight hours. If the stock were thicker we would steam longer. There is a danger of discoloring the material if the steam is kept on too long. After twelve hours of steaming if the lumber is examined it will be found that the steam has penetrated to the centre of the stock and that it is uniformly heated through and through.

Humidity Lowered Gradually

With all the steam and moisture in the kiln the air is at the saturation point, or in other words, contains all the moisture that it can hold at the temperature. The next step is to gradually lower the humidity to be desired point, 85 per cent., while at the same time maintaining the temperature at 110 degrees. You will note I said gradually lower the humidity. If this is done too quickly there is a danger of face and end checks appearing, consequently we usually allow 24 hours for lowering the humidity to the starting point.

When the dry bulb registers 110 and the wet bulb 106, indicating a humidity of 85, we are away. Instead of changing the temperature and humidity every twenty-four hours or every two or three days, as some do, we work altogether by the condition of the stock. I have a few test pieces placed conveniently in the cars and test them from time to time. If surface or end checks appear we increase the humidity in order to check that tendency.

Say the stock showed a moisture content of 70

when we started drying. We would hold the 110 temperature, 85 humidity until the moisture content dropped to 50. When 50 is reached we lower the humidity 10 points and increase the temperature 5 degrees and hold until a moisture content of 40 is reached. At 40 we raise the temperature another five and drop the humidity to 75 and hold until the moisture content is 30. We again increase the temperature 5 degrees to 125 and lower the humidity 5 points this time, and hold until moisture content reaches 25, then change the temperature and humidity each 5 points. The same at every five point drop in moisture content until the test shows a moisture content of 5 per cent. then the stock is ready to come out.

When the final stage has been reached the thermometer will read 150 and the humidity will be about 35 per cent. For oak or similar wood we never carry a temperature above 150 and in many cases do not run above 145.

In the last stage we watch the lumber carefully, and if it does not appear to be checking carry the higher heat. When the lumber leaves the kiln we run it into the warm storage shed and let it set and cool for twenty-four hours, or even forty-eight if possible.

This may seem a slow, tedious way to dry the stock, but after all it is results that count, and we surely get results that amply repay for all the trouble taken. Our stock comes out in practically perfect condition, and spoilage has been reduced to a negligible quantity.

Increasing Production by Better Light

With the furniture manufacturer bending every effort to maintain his plant at its highest efficiency, and to turn out the largest possible quantity of goods, one of the most fruitful sources of increased production—better lighting—is being overlooked.

The majority of the furniture factories in Canada are poorly lighted or rather inadequately lighted. Good lighting means more than providing a certain number of windows and lights, it means a proper and thorough distribution of the light provided. In many plants a workman at a machine situated a short distance from a window is in semi-darkness.

The advantage of good illumination, both natural and artificial, are too numerous and too obvious to need reviewing. A few of the more important benefits are, increased production, decreased lighting costs, fewer accidents and greater comfort for the employees.

The importance of the latter item—greater comfort—is just beginning to be realized. An efficiently lighted factory is not only a cheerful place in which to work, but the freedom from eye strain has a marked effect on the general spirit or attitude, and health of the workmen. Eye strain makes a person irritable, careless, inefficient, and has a far reaching, little understood, effect on the whole nervous system.

An ideally lighted factory would be one in which an adequate amount of light was provided, and so evenly distributed and diffused so that all shadows are illuminated. The diffusion of light and the elimination of sharp shadows is the aim of all lighting engineers.

The advantages of white paint as an aid to the even distribution of light is overlooked. A good coat of white paint, either flat, eggshell or gloss, on the walls, ceilings and equipment will practically double

the efficiency of the lighting system. Paint is better than whitewash in that it is a better reflector of light, is more permanent and can be washed down with a hose and kept white.

While white paint is a great aid in the distribution of the light a study of the lighting system should be made and suitable globes and reflectors installed.



Note the contrast—your factory may have plenty of light but be poorly illuminated.

The day of the bright, glary light, with the bright flat reflector is passing.

The simple expedient of cleaning the lights and windows will improve matters. It is estimated that the loss of illumination due to dirty globes and reflectors, runs as high as sixty per cent. Just think—60 per cent. of the money you spend on artificial lighting is probably wasted. The same with the windows, the coating of grime and dust keeps out a large percentage of the daylight and helps run up the bill for electricity.

Keeping lighting equipment clean makes more light at less expense.

How Furniture Costs Increase

Statistics recently compiled show how the different materials used in furniture making, have increased in value. The costs of 57 articles used in the furniture factory were studied and it was shown that the average increase over 1914 was 150 per cent. To enumerate, lumber 170 per cent., red gum 300 per cent., sap gum 225 per cent. No. 2 leather increased 236 per cent., hardware 127 per cent., window glass 175 per cent., mirrors 192 per cent., and very scarce, coal 159 per cent., labor 100 per cent., quarter oak No. 1 common 201 per cent., 1's and 2's 209 per cent., plain oak 156 per cent., beech 164 per cent., elm 121 per cent., crating lumber 118 per cent., and finishing materials 153 per cent.

While these increases have been taking place in furniture requirements, the prices of 265 commodities in everyday use have advanced on an average of 113 per cent. in Canada and 125 per cent. in the United States. In the same period the average increase in furniture values has been 100 per cent. This speaks well for the integrity of the various furniture manufacturers.

Now that files are at luxury prices, attempts will be made to renew their cutting edges by all different kinds of ways. Have you ever tried sand and a steam blast?

Information on the Hardwood Market

Smaller Stocks Predicted for Next Six Months—Prices Remain Firm With Slight Upward Tendency—American Buyers Covering Requirements for Coming Season

Lumber is the basic material the supply of which practically controls our furniture industry. If for any reason the supply were to be cut off or curtailed the output of furniture would suffer accordingly. Unfortunately Canada does not grow all the different woods required and annually imports large quantities of oak, walnut, red gum, mahogany and other woods from the United States.

The present condition of this American lumber market is uncertain and chaotic in the extreme. The demand exceeds the amount produced, many lines are practically off the market and all lumber is secured with more or less difficulty.

The following information on the various woods is first hand and was gathered in the different producing centres. It is presented in the hope that it will be of service to the Canadian furniture manufacturers in figuring their requirements and anticipating their needs for the coming season.

OAK LUMBER

In order to get a complete grasp of the situation let us run back to Nov. 1918. Before the armistice was signed the production of oak,—of all hardwoods,—was largely for war purposes, with the result that when the armistice was signed commercial stocks were at a low ebb. In the succeeding month, owing to the uncertainty of what the future held in store, the market was practically stagnant, this coupled with labor trouble and rising expenses made the production of lumber a very precarious undertaking. The result was that when the buying rush started last spring the demand exceeded the supply.

Since spring production has not equalled the demand. To-day we find that stocks of practically all grades of oak are very low, well below normal. The different oak manufacturers have a certain amount on hand but this consists largely of broken lines and lumber that is not dry enough to be shipped out. A great many of them are over sold, having taken orders for delivery some months ahead.

The demand continues strong, in excess of output, which means that stocks will be exceptionally low at the beginning of the year. What are the prospects of lumber being accumulated during the winter months? The operators are at present laying in their logs for the winter cut. We find that labor conditions and a long spell of rainy weather are hampering logging operations. As a result few if any mills are able to obtain anything like a normal supply of logs and the production of lumber will be further reduced during the winter so that by spring it is more than likely that available stocks will be less than at the present moment.

Quartered oak is being more eagerly sought after than it was sixty days ago, with a very small supply on hand. While prices on quartered stock have been practically stationary for some time there is every indication that these will be forced higher in the near future.

With oak being eagerly sought after and the likelihood of the available stocks being further diminished during the coming six months, it would appear as if it would be wise for the furniture manufacturer to anticipate his requirements for the next eight months and buy now.

With regard to the future, oak is in an unusually strong position. The present stand is sufficient to meet all requirements for years to come.

WALNUT

The use of walnut is steadily increasing both in Canada and the United States. One manufacturer stating that about four times as much walnut was consumed in the last year as in any former year. Users of walnut need not fear that their requirements cannot be taken care of as most of the large producers have ample stocks on hand.

It is the opinion of those best in a position to judge that walnut has "come back" to stay for a good number of years and in consequence all the walnut manufacturers are bending every effort to supply the demand.

The supply of logs appears to be adequate. Many manufacturers are still sawing logs left over from the supply purchased for war needs. The output of walnut logs from the different logging centres is below normal. With the supplies on hand and provided bad weather and other causes do not further lessen the log output it is anticipated that the supply will about equal the demand, provided of course that there is not a marked increase in the amounts purchased.

The quantity of manufactured stock on hand while not large, appears to be ample to take care of the present requirements. The call has been out of proportion in that the furniture manufacturers have been the heaviest buyers. Their requirements call largely for medium and low grade lumber leaving the high grade stocks on the hands of the manufacturers. Lately the better grades have been moving more freely.

The call for walnut veneers has been stronger during the last fifteen months than during any similar period in the past 25 years. The demand for the higher grades of furniture and the demand for walnut panels for interior finish has been responsible for this heavy consumption. However veneer stocks are in a satisfactory condition and a shortage is not anticipated.

The basic prices for walnut delivered in Canada are as follows: 4/4 stock FAS \$200. No. 1 common \$120. No. 2 common \$60. Selects \$168. It is not generally believed that there will be any marked increases in quotations but the fact that the manufacturer is paying increased prices for logs seems to preclude the possibility of prices dropping during the first six months of 1920.

American users of walnut seem to have accurately sized up the situation and to-day they are placing orders covering their requirements for the greater part

of the coming year. In anticipation of the fact that the likelihood of lower prices is extremely remote, while there is a possibility of higher quotations prevailing, the careful buyer will, from time to time, keep himself fully covered, more especially for his immediate requirements.

RED GUM

The situation in the red gum market is very similar to that of oak. During the past season the demand has exceeded the supply. The output of logs has been curtailed and hampered until to-day stocks are at a very low ebb. It is estimated that the supply of gum lumber on hand is only about 56 per cent. of normal, this includes both the sold and unsold stock. The amount of lumber on hand that is not contracted for is given as 26-30 per cent. of that usually carried. Many mills have sold all they will be able to deliver during the balance of the year.

During October the rainfall in the logging sections was 11.7 inches instead of the usual average for October of 3 inches. If this kind of weather continues there will be very little logging done during the remainder of 1919. This would mean that the amount of lumber available around the first of 1920 would be extremely small.

Another factor that must be reckoned with is the shortage of cars. Most of the mills run their logs in by rail and all lumber is shipped out the same way. The situation is acute as nowhere near the necessary number of cars are to be had. The effect is felt at both ends for not only are shipments slow but the logs are not coming in as they should.

The market is very firm and there is a strong demand for all grades of stock. It does not appear possible that the amount produced during the next few months will be able to take care of the requirements of the gum using industries. In view of this a reduction in values is extremely unlikely.

The Gum Manufacturers Association, in a letter received, says: A definite opinion as to the lumber market during 1920 would be impractical at this time but taking into consideration the heavy demand from all sources, together with the conditions prevailing at the production end, it does not seem reasonable or possible that prices, which are controlled by supply and demand, would decrease materially for some time to come.

MAHOGANY

A number of reports covering the different mahogany centres in England give a reflection of the probable trend of events in the mahogany situation in this country. Substantial sales have been effected of late in the English market, both privately and at auctions, with prices firm, in fact, showing distinctly higher rates in some cases. The arrivals of logs have been relatively small and stocks readily absorbed. There is little prospect of large imports from any quarter in the near future. Therefore, a firm market is assured for some time to come.

Of the Honduras mahogany logs recently offered very satisfactory prices were paid for the better class logs, but there was a notable lack of interest in round

logs of inferior character of which up to a short time ago there was a considerable quantity still on hand. This stock, however, is firmly held and there is little prospect of weakening prices.

There has been no import of Tobasco mahogany for a long time and fresh supplies are eagerly looked forward to. In African mahogany distinctly higher rates rule on logs recently offered at auction, the demand and competition for this wood being unusually active. Stocks are very low.

The small quantity of Cuban mahogany logs submitted at auction has been held for very high prices and only a small portion has found buyers at these figures.

The Cause of Bird's Eye Maple

Many men have wondered just how the figure known as bird's eye maple has been formed in the wood.

The American Forestry Association of Washington, D.C., is authority for the explanation that this figure is produced by casual or abnormal buds which form beneath the bark, and are rarely able to force their way through and become branches. The first buds of this kind may develop when the tree is quite small, even then they are unable to perforate the bark, but they may live for many years just under the inner bark. If one bud dies another is likely to rise near it and continue the irritation which produces the fantastic growth known as bird's eye.

With a magnifying glass it is possible for one to verify the above explanation, for it is a comparatively simple matter to trace the bud formation as distinguished by the more compact grain which in the eye itself is like the end grain section of a small branch.

Bird's eye veneer has to be handled very carefully, because the eyes sometimes have a tendency to drop out, leaving holes.

It is said the Japanese produce artificial bird's-eye growths in certain trees by inserting buds beneath the bark.

How to Apply Hand Clamps

In putting up jobs of glue work in the mill and shop where hand clamps are to be used, an important fact to keep in mind is that the pressure application should begin in the center and work outward. Say you have a big, wide panel job which will require the use of quite a series of hand clamps. After the glue is applied and the outside cauls put in place, attach your first hand clamps along the center, then work out gradually to the edges and ends.

This not only prevents loose places and blisters in the center, but it makes a better job all around. It works the air out, whereas, if the edges were tightened down first the imprisoned air would almost surely cause trouble. Also it works any surplus glue out of the edge and prevents lumpy spots from too much glue here and there.

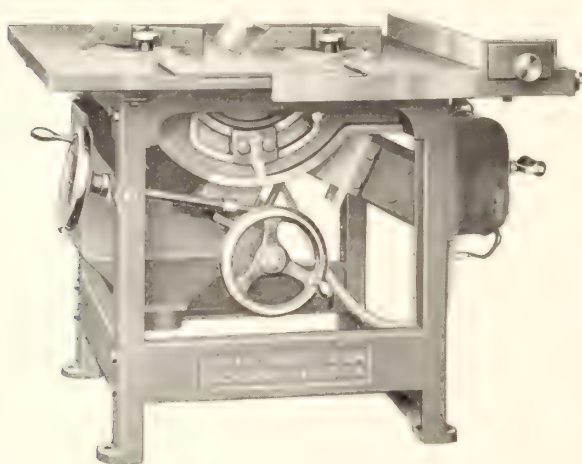
Timber can be too dry for working purposes, leave it for a day or so after it has come out of the drying sheds before you work up the stock.

It is not the mill which is kept tidy and clean that makes the most money, but the one with well equipped machinery, efficient workmen, and skilfully sharpened saws.

Machinery & Equipment

Saw Table with Tilting Arbor

Another application of direct motor drive in the construction of a new woodworking machine is shown below. It is a direct motor driven saw bench with tilting arbor, made by Baxter D. Whitney & Son, Inc., Winchendon, Mass., who are specializing in the manufacture of direct motor driven woodworking machinery. In the design and construction of this machine the makers have used the same motor applica-



The saw arbor is tilted to secure the desired bevel.

tion that is being so successfully used in their well-known direct motor driven double spindle shapers.

Two motors having a speed of 3,450 revolutions per minute are mounted directly on the saw arbor. The motor housings are a part of the yoke carrying the saw arbor and the ball bearings, all of which is tilted as a single unit to secure the desired bevel of cut to the saw instead of the usual method of tilting the table. This method of mounting the motors eliminates all extra bearings as the same bearings serve for the saw arbor as well as for the motors.

The frame of the machine is so designed that it allows easy access to all working parts and permits the operator to work close up to the saw. The yoke carrying the saw arbor and motors is guided in a circular groove, having a wide bearing surface. It is also raised or lowered independently in dovetailed ways. By the movement of a handwheel, the saw arbor can be tilted to saw at any desired angle up to 45 degrees.

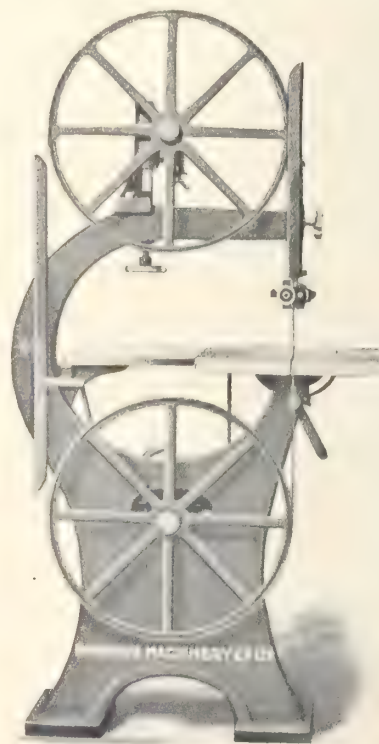
The motors are started and stopped by a safety first enclosed switch mounted on the machine. This saw bench is equipped with two cut-off gauges and a ripping gauge. Some of the advantages the manufacturers claim for this new type of motor driven saw bench are the elimination of countershafts and belts and a saving in floor space. This saw bench can be erected and operated in any desired place, regardless of shafting. It is an independent and compact unit. It has a constant and steady saw speed and a true and

even running saw arbor. There is no slowing up of the saw due to belt slippage.

The rigid table gives a better support to the material being sawed than a tilting table. The operator can do bevel sawing on a rigid table to better advantage than on a tilting table. Quicker and more accurate adjustment can be made and the machine operated with a greater degree of safety.

New Dominion Bandsaw

A bandsaw that has recently been put on the market is the "Dominion 32." This is one of a line of new woodworking machines that is being manufactured by the Dominion Machinery Company, Toronto, Ont. The bandsaw illustrated on this page is fitted with SKF ball bearings on both shafts. The wheels are 32 in. in diameter. The frame is of ample size



Dominion 32" band saw.

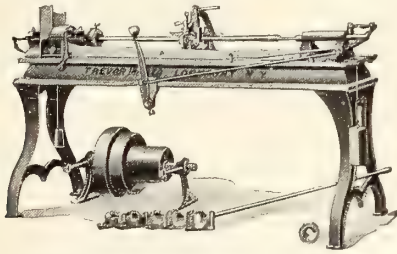
and is cast in one piece, what is known as the cored out type. The bottom wheel is provided with a guard which can be detached quickly when required. Full particulars of line and circulars may be had from the Dominion Machinery Co., 110 Church St., Toronto.

Every machine has its special speed. There is a balance speed which allows the maximum of movement with the minimum of vibration.

A wood-trimmer is only a small tool, but its use makes an enormous difference to most work.

Trevor Gauge Lathe

The accompanying cut illustrates a gauge lathe, one of the Trevor line of woodworking machinery. It is an efficient labor-saving machine and is used for turning chair posts, chair rungs and legs, handles, in fact will produce all the turnings required by the



One of the Trevor line of woodworking machines.

manufacturer of furniture and woodenware. It is simple in design and construction and has special attachments for facilitating the placing of the work in the machine and removing it after it has been turned.

Complete description and other information may be had from the makers, the Trevor Manufacturing Co., Lockport, N.Y.

Tongue and Groove Machine for Staves

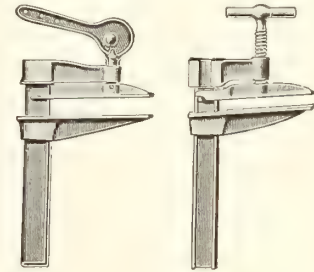
For holding such materials as flour, sugar, cement, etc., a barrel constructed with tongue and groove staves has many advantages over the commoner, square-edged stave barrel. Leakage is reduced to a minimum and a stronger and stiffer barrel is the result. A machine for matching barrel staves is the No. 126 stave tongue and groove machine, manufactured by the E. B. Holmes Machinery Co., Buffalo, N. Y. It is equipped with a device which reverses every alternate stave, thus ensuring that both ends of the barrel are the same in diameter. Warped, crooked and cross-grained material may be worked without any danger of the edges being torn out or rough. The staves are discharged automatically, enabling one

operator to run the machine. Five horse power is required to drive it and the speed of the cutter head is 5,500 R.P.M.

A variable feed rip saw and lightning cut-off saw are illustrated in the advertisement of the E. B. Holmes Machinery Co., appearing in this issue.

Colt's Woodworking Clamps

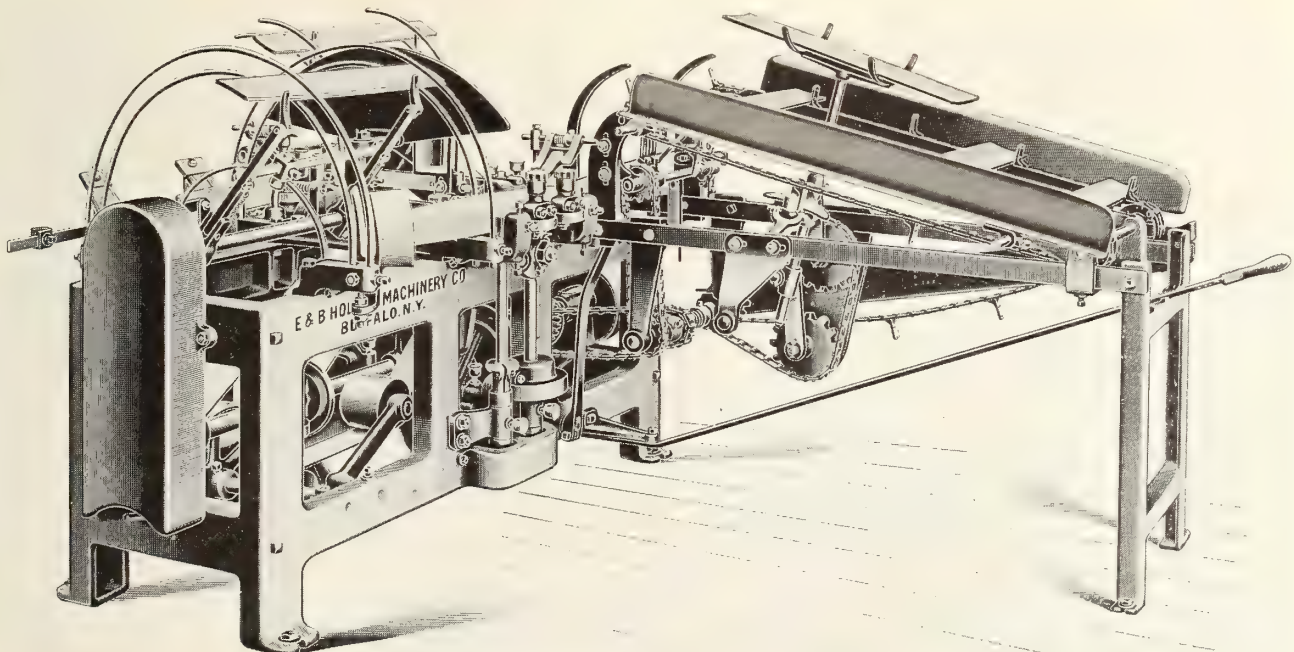
The "Colt's" Clamps, manufactured by the Batavia Clamp Co., Batavia, N.Y., embrace a full line, both eccentric and screw, designed to meet all the varied requirements of the woodworking industry. The accompanying illustration shows the vise clamp, and the eccentric and screw types. The material used is the best ob-



Colt's eccentric and screw clamps.

tainable. The steel is all specially rolled.

Rapid adjustment by means of the sliding foot or jaw and the quick application of pressure by the eccentric or a short turn of the screw, mean a saving in time and the broad jaw clamping surfaces enable them to be used for delicate work. Special clamps are provided for pattern makers, cabinet makers, carriage workers, piano makers, etc. The complete line includes in addition to the clamp mentioned, mitre clamps, C. clamps, hand screws and adjustable hand screws with steel spindles.



Machine for tongue and grooving barrel staves.

Upholstering and Trimming

Is Specializing the Solution?

Piece Work and Specializing Factors in Maintaining Output—Employees Placed Where best Adapted

By W. O. Mendell.

The cry for greater production is heard the world over. Never in the history of the furniture industry has there been such a demand as at present. With the decreased hours of labor and the lack of skilled mechanics it is of the utmost importance that every workman should be used to the very best advantage and at his greatest speed.

It is an undeniable fact that a man may be deficient in one line and yet very efficient in another. In other words, he may not be able to produce much in one kind of work, while at another kind, he may overshadow some of the best workmen. How many square pegs in round holes in the upholstering world is hard to guess.

In my experience I have found two things of great advantage, first, piecework, and second, specializing. The piecework question has been one greatly opposed by a great many workmen and the reason is not very hard to find. No sooner had the workmen reached a certain amount of wages than his scale was reduced, so that no matter how hard he may work or how diligently he may apply himself to the task given him, there comes to him no additional pecuniary reward.

Piece Work Prices Maintained

This is manifestly unfair and foolish, yea thrice foolish is the superintendent who expects to get the best out of his people in that way. There must be an assurance that there shall be no reduction in the price set upon piecework. For years it has been my practice to guarantee my workers their price, for one year at a time, against reduction. I have yet to find the worker who would rather work at daywork, at the current rate, than work piecework. This rule must however be flexible so that if a price is found which is manifestly unjust to the workers it could be remedied at once.

A foreman should have enough knowledge of the work to enable him to set a fair price. Not long ago in an article in this journal it was mentioned that a piece should be tried out before the price is set. If that is the way the price should be set of one of the average workmen should do the work and not one of the very best. The golden rule put in practice here would avoid a great deal of dissatisfaction and bad feeling.

Placing the Workmen Advantageously

The matter of specializing needs a great deal of care and observation. Did you ever see a man or woman whose fingers seem to be all thumbs? With the utmost patience and the greatest diligence they cannot be taught to make a ruffle or to properly space the nails or buttons in a piece of work. Of course we

can give them their walking papers, as not suited to the trade but did it ever occur to you to try them on some of the work that, may be, did not require such flexibility of fingers or such accuracy of eye.

The first thing is then to find the place for the man or the woman. This may require several changes but once the place is found it is well to let them work out their own method of working. Too often the foreman wants every worker to do everything just as he does it. It is much better to teach them the general principle of the thing and then let them find the way that is easiest and therefore the fastest to them.

Judging the Fitness of a Worker

In dividing the work, especially where girl upholsterers are employed, as with us, attention must be paid to the strength and size of the worker, the reach of the arm and the quickness of movement. In our K. D. work speed is a great essential as the pieces are often small and a good many must pass through the hands of a worker in order to constitute a day's work. It would therefore be folly to give these small pieces to girls of masculine build and strength but rather to the slight build and the light ones. It is a case where it is best to give the work that requires the driving of a considerable number of tacks to the fastest one and the finishing work to the one who is the tastiest and the neatest.

To sum the matter up. In order to get the most work done by the least workmen in the smallest space compatible with the health and goodwill of the workers requires not only on the part of the firm's representatives constant and minute observation, an open mind for improvements and methods of working but also a regard for the personal ability of every worker.

Magnetic Hammers Increase Speed

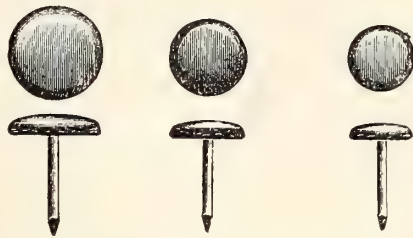
One of the greatest aids in obtaining speed in upholstering is the use of the magnetic hammers on all the work, where it can be used. The dexterity, the speed, and the accuracy that can be obtained by the use of these hammers is often the marvel of furniture men visiting the factories where they are used practically all the time.

It is no more necessary for a foreman to be an experienced upholsterer than it is for an architect to be a mason or a carpenter, but he must have a keen perception, a quick thinking machine, a veritable brain for details as well as generalities. He must be firm yet flexible, just and impartial, interested in the welfare of the worker and equally true to the interest of the firm who employs them.

Selling Sawdust to Fruit Packer

A large box and barrel factory located in California has installed a plant to screen the sawdust. They sell a large quantity of fruit boxes to the fruit packers. In future the packers will take the sawdust as well and use it for packing and preserving their fruit.

Canadian Metalene UPHOLSTERERS' NAILS



Enameled to Imitate Leather

Made in the following standard colors:

Medium Green, Dark Green, Very
Dark Green, Tan, Light Maroon,
Dark Maroon, Black.

We manufacture all kinds of Cut Tacks, Small Cut Nails and Clinch Buttons. Especially catering to the furniture and upholstery trades. Send for samples and prices.

We can make prompt shipments from stock of any of the above products.

Dominion Tack & Nail Co.
Limited
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Grand Haven

-

-

-

Michigan

An Idea for Upholsters

A Philadelphia man is planning to engage in the manufacture of upholstered furniture, and to do a wholesale business, without the employment of any upholsters with the exception of one who will be used in the more difficult work.

This man has been engaged in the retail upholstering business for the past four or five years, employing four upholsters and is in excellent standing financially. His plan, which does not require full-fledged upholsters, is to divide the work up, having a man continually making but one part and the one upholsterer to do what little work will be too difficult for the other workers. The plant will be on a fairly large scale. He is said to have made a thorough study of the problem from all points and is convinced that a plant thus conducted can be made successful. He is fully aware that such methods are in use in the upholstering departments of railroad car shops and that his will be the first of its kind to be in operation in Philadelphia.

Middle West Demands Fine Furniture

According to a western furniture man who has made a study of local conditions, the people have too much money. He outlined the situation as follows: There is a very keen demand for good furniture, and for the best, of which the supply is limited, but not much demand for the lower-priced, which can be made from woods grown in Canada, and of which the supply is more ample.

In order to get southern lumber suitable for the

production of the best furniture it is necessary to send a man down to New York or some other point in the United States and keep him in constant touch with the goods, so that they will not be diverted. In this way it may be possible to steer a few car loads of oak, walnut, or mahogany to the plants on this side of the border. At the present moment the furniture men in the United States are taking practically all these woods to keep their own plants in operation.

Prices of all furniture is still moving upward, and there is no possibility of meeting the demands of the enriched farmers and other buyers in the west.

Waterproof and Fireproof Glue

A leading British timber journal says that a glue that is both waterproof and fireproof can be made by mixing a handful of quicklime with 4 oz. of linseed oil. Boil until quite thick, and spread on tin plates. It will become very hard, but can be dissolved over a fire, or in a gluepot like common glue. This composition really is not glue at all, but a sort of waterproof cement that is extremely tenacious. A very cheap waterproof glue is made by melting common glue with the smallest quantity of water possible. Add to this, by degrees, linseed oil made "drying" by boiling it with litharge. While the oil is added the ingredients must be well stirred so as to mix them thoroughly. Another plan: Take of a very thick solution of glue 10 parts, linseed oil varnish 5 parts, and litharge 1 part. Boil these together for ten minutes, and use while hot. The additional ingredients have no effect whatever on the adhesive properties of the glue, which is rendered entirely waterproof.

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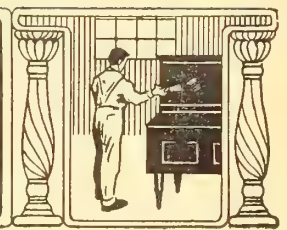
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THE FINISHING ROOM



What to Look for in Enamel *Testing for Flow and Covering Qualities—Drying* *and Hardening Important Considerations—* *Suggestions for Judging Tints*

By Dixy Wells.

[This is the first of a series of articles on enamel by the above author. Mr. Wells has had a long experience in this class of work and the information contained in these articles should prove of real practical value in all finishers. —The Editor.]

Enamels are divided into two classes—flat and gloss. The flat embraces ordinary flat enamels, and those which may be baked, although a high gloss is often obtained without the baking process. The flat enamels are somewhat similar in nature to the gloss goods, but have several points of difference, with the exception of the flamboyant division. All gloss enamels should include the following properties to give successful results.

The lustre should be high and of a permanent nature. An enamel which is quite glossy on application may lose much of its brightness through the drying process, and therefore, judgment should not be passed in regard to this until at least three days after, when the film will be hardened.

To gain reliable information it is best to compare the enamel surface with a small piece of similarly painted and freshly enamelled wood. A better plan still, however, as the surface worked on is sure to be uniform in each case, is to enamel a piece of glass, allow it to harden, and then enamel another piece, and while the second piece is still wet, compare results. Any difference in lustre will at once be detected by following this simple plan.

In finding the relative gloss of enamels it is well to employ the actual conditions under which they are applied as the lustre of some goods varies but little whether applied to paint or the gloss, and that of others vary much. Comparative tests should be made on identically painted wood and at the same time.

The permanence of gloss again is very much a question of time, yet a fair index to this may be gained by exposing the boards, finished as above, outside for a few weeks, or for two or three days at an equal distance from the heat of a fire, and for the same number of nights if they are exposed outside.

Should be Good Flowing

This is one of the most important qualities in a good enamel. Immediately after application it should, like water, seek its own level, that is, flow together to a smooth mirror-like surface. Where work is to be of the highest class a slight loss of lustre may be passed, when the lack of this quality will not. Needless to say, enamels which are defective in this respect do not give an enamel-like surface, even though they may be quite glossy, and much labor may have been

spent on bringing up the ground work suitably. Therefore, every enamel not already well known should be tested for this.

It is well to use only goods of standard make, covered by a reputable trade mark and backed by the responsibility of a well-known firm. This saves many a loss.

By bringing up a board especially for enamel work, then applying the material to it in all directions until sufficient time has lapsed to allow of doing a large panel, a satisfactory conclusion is reached. If it is defective the brush marks will be visible as so many ridges, and if very bad such ridges will not only be visible but will be felt plainly by moving the fingers across them when dry.

Glass is sometimes used for testing this quality, but as such is not the material generally to be enamelled such tests are usually futile for practical purposes. Some enamels flow out to perfection on glass, and yet will not do so on wood or metal no matter how smooth. As a comparative test for flamboyant enamels the glass method is of course satisfactory.

Color of Enamel Varies

Beauty of color applies to the most used of all enamels—white ones. A pure white should not perceptibly enter into yellow nor into blue, and yet owing to the nature of things, such is not to be had in paint. Therefore the practical finisher should compare enamels and see what is best in regard to white tone. This should not always be done by comparing the color of each in bulk, as the color then varies more or less according to the density of the material, but should be noted by scientifically applying some of each to an oxide of zinc ground, which gives a much purer white than white lead, thus enabling judgment to be passed more easily.

When a seemingly pure white cannot be obtained it is advisable to choose the yellowish cast, as it is not so cold, so gray looking. This pure white tints to a prettier cream, and where such tints of enamels is desired it is recommended to find the changes of color which an enamel is subject to, whether under the influence of light or shade. It is simply necessary to coat two similarly painted pieces of wood with the material and to expose one to the light of a window and the other to the darkness of a drawer or cupboard, then after a month or two to enamel a third bit of wood and compare with the others.

Testing for Covering Quality

The body, or opacity of an enamel is due to the amount and quality of the pigment employed in its manufacture, and is easily found by noting whether the material will cover a given surface so as to render it completely invisible.

In these days this quality is of great importance, especially in connection with white work, as the number of undercoats given previous to the final one of

(Continued on page 122)

Increased Results from Finishing Room

Change in Layout of Equipment Materially Increases Output—Labor Conserved and Costs Reduced by Proper Planning

A large Canadian manufacturer recently made a number of changes in his finishing room. He found it was necessary to increase the production of this department and decided that it could best be accomplished by re-arranging the equipment and routing the work through in a steadily progressive stream. The accompanying sketch shows the layout of this department after the changes had been made.

The stock is carried to this floor by the elevator in the corner. The work to be fumed is taken to the fuming room, given a coat of acid fuming stain and placed in the fuming box. When fumed it is removed and shellaced and waxed. This is done in the space nearest the storeroom. The finished fumed stock is then hurried out of the finishing room.

In the meantime the stock requiring staining was moved on and dipped in the staining tanks. From

the filler and the different coats of shellac and varnish.

A separate room has been provided for the spraying machines which take care of the varnishing. The cheaper grades of work are given two coats of varnish while three are applied to the finer pieces. The undercoats of varnish are dried in kiln No. 2 where they remain for twenty-four hours. After receiving the finishing coat the work is placed in kiln No. 3. Here it remains from five days to a week.

The large space marked seasoning room is kept warm and is used for storing the finished stock as it comes from kiln No. 3. The work is left in this room as long as possible, preferably ten days to two weeks. The rubbing and polishing is done in another department. After being seasoned for a couple of weeks the varnish is very hard and durable and takes an exceptionally fine polish.

It will be noticed that, with the exception of the fumed work which doubles back, the work has made a complete circle of the finishing department and has advanced after each operation. This results in confusion and lost motion being reduced to a very negligible quantity.

There are many finishing rooms that would respond to a little thought and attention. A considerable amount of time is often wasted by the men being forced to carry the work to and fro, taking hundreds of unnecessary steps, for the want of a little system. One advantage of the method outlined is that the finishers realize that a certain amount of work comes to them each day and it is up to them to put it through. This tends for greater efficiency.

Maximum Production from Spraying Machine

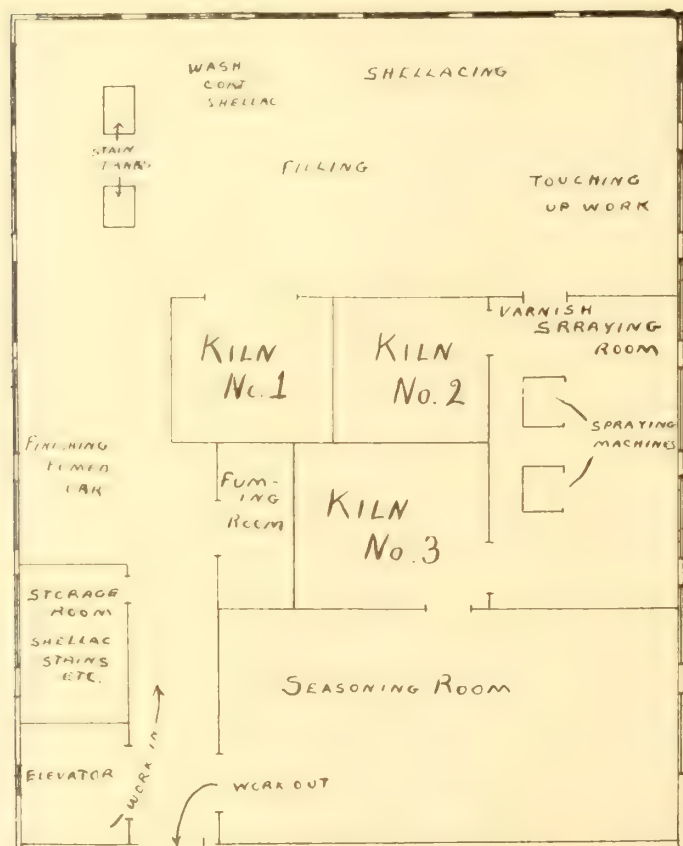
Capable of Handling Varnishing, Staining, Shellacing and Filling—Assistant to Move and Prepare Work

By C. H. Green.

The spraying machine is a very efficient device and is capable of turning out a large quantity of work. In order to use it to the best advantage and make it earn as much as possible, it is necessary that a skilled mechanic should operate it and he should not be allowed to do ordinary labor. He is producing while running the sprayer, not when lugging the work around the finishing room.

When doing case work an assistant should do all the carrying, bringing the case to the machine and taking it away again after it has been finished. In this way a man should average 40 dressers an hour. It will be found that it will keep four or five boys or girls busy sandpapering for one machine. The same applies to chairs. The assistant should see that they are dusted and placed convenient for the spray operator. With capable assistance fifty or sixty chairs an hour can be varnished. Enamelling would be done at about the same rate.

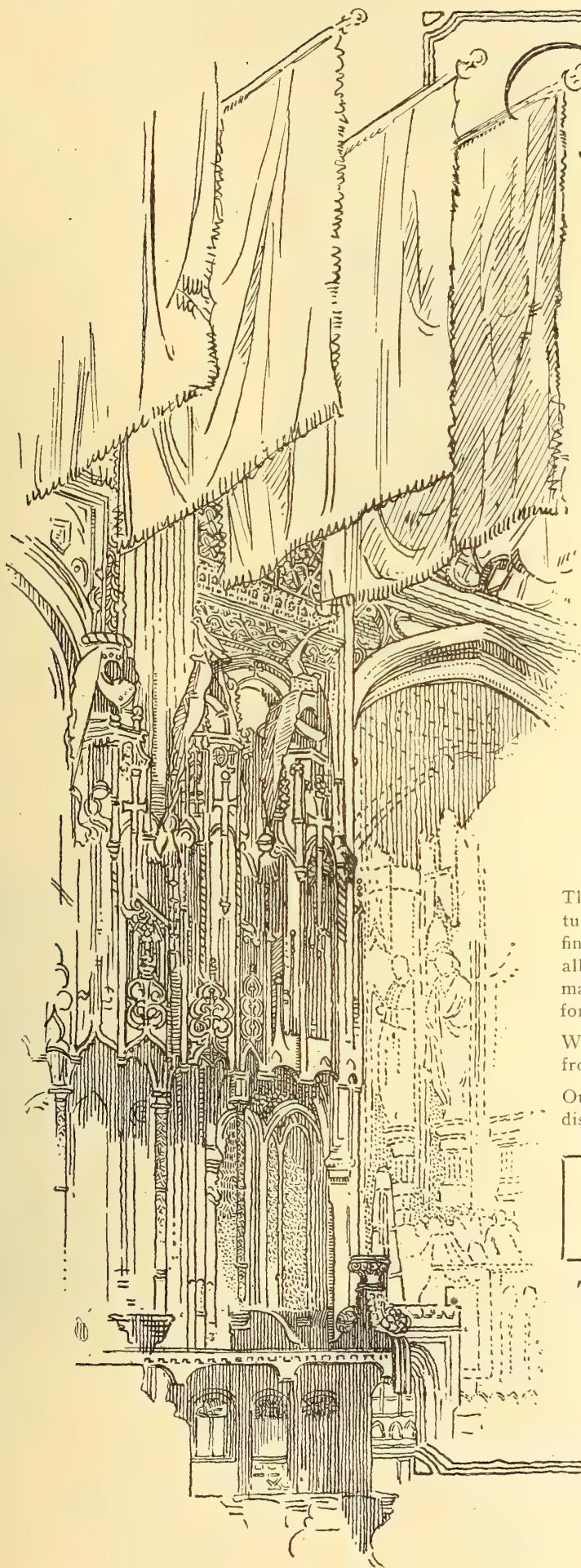
When beds are going through six or eight head ends are dusted and placed on the table and the edges



Finishing room planned to accelerate production.

the dipping vats it is placed in kiln No. 1. After being thoroughly dried it is taken out and given a wash coat of shellac, to stiffen the grain that had raised, sanded and then a coat of filler. The filler is rubbed off and the stock is again placed in kiln No. 1.

When the filler is dry the pieces are taken from the kiln and given one or two coats of shellac, one on the cheaper lines and two on the better grades. The pieces are now touched up to equalize the color of the different woods and passed to the varnishing room. Fine sandpaper is used after the wash coat of shellac,



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varnished first and at the same time. The assistant should be on hand to help place the beds in the drying-rack. These racks are made with twenty-one spaces, allowing $1\frac{3}{4}$ in. for each space. A short dowel with a sharp point is driven in the end of each slat, so that the foot end, which is varnished on two sides, will not touch the slat. This saves carrying the beds to any particular place in the varnish room, and also does away with the block marks on the posts which occur when the beds are piled flat. These racks are mounted on wheels, and can be run into the drying-room, and from there to the other departments as required. Working this way will effect a great saving in time.

The toilet frames for dressers can be worked up in quantities. A batch of fifteen or more is placed face downward on the table and the edges first varnished, enamelled or primed, as the case may be. This prevents the material lapping over on the face of the frame, so that when the operator lifts it to do the front, he is working on a clean surface. As each toilet is finished, the assistant will take it away and place it in a suitable drying-rack, which has been placed near the spraying machine. About 150 frames can be varnished in an hour. The side rails for beds are done in a similar manner. Four or five are placed face downward and the edges done first. The operator then has the assistants turn the rail over and he does the face. In this way the operator never puts the gun out of his hands.

The Machine Doing Work of Four

One operator and a good assistant kept busy will do the work of any four machines operated each by one man. The main thing about a spraying-machine is to keep it busy if you want it to pay. An operator should never be allowed to carry work to and from the machine. That is what the assistant is for. In addition the assistant should be taught to mix the materials and do the dusting while the operator is doing edges and large surfaces.

Many furniture manufacturers use the spraying machine for filling. The filler is mixed thin and an agitator placed in the container so that it will not settle. After the filler has been applied, have a second assistant go over the work with a stiff brush and rub the filler in. It will be found that oak chairs, case goods and other articles can be done in this way. Enough work can be turned out to keep six or seven men busy wiping off and cleaning the filler. When filling, the operator must be kept busy, otherwise the material will settle in the hose. Jacobian and other stains can be applied in the same manner.

The spraying-machine is a production tool and is capable of earning good profits, but only when kept busy. Every effort should be made to plan the work and assist the operator so that he has little else to do but work the spray.

To-day the world burns with talk of the responsibility of the employer. We are men, or should be. Have we no responsibilities to our employers. Every employer, every employee has responsibilities to each other. Do not stifle your responsibilities and say "no. The boss should do so and so for me."

Artificial drying saves time and capital, and delivers the goods just when they are wanted.

Three Rubbing Machines Do the Work of Eight

By E. D. Ranworth.

One morning I found that the foreman and five out of eight rubbing machine operators were sick with the influenza. I took charge of the department myself and endeavored to speed up production. I saw that the big obstacle to speed lay in the fact that the operators found it impossible to maintain sufficient sustained pressure on the rubbing blocks with their arms. It occurred to me immediately that a device which would apply this pressure automatically would enable the operators to do vastly more work.



The old way.

That very night I went down in our machine shop and made an attachment which would exert a uniform pressure of from fifty to sixty pounds on a pneumatically-operated rubbing machine. Within a short time I installed this attachment and found that it enabled one operator to do as much as three operators could do under the old system of muscular pressure. I made attachments for two more rubbing machines and our three operators were doing as much rotten-stoning, and doing it better, than was done by the eight operators under the old method.

This pressure is applied pneumatically and later I invented an attachment which lifts the machine off the work automatically by the simple turning of a valve. Then I was able to put girls on the rubbing machines instead of men.

After using this attachment for six months and observing its operation carefully, I find that one girl operator can rotten-stone as much surface as three men operators could cover formerly. And the work is done better because the pressure is always uniform. A patent has been secured on this attachment and the Paasche Air Brush Company of Chicago are manufacturing and placing it on the market with their line of up-to-date finishing equipment.



The new way.

Have you ever thought that where a man can sit down and do his work, such as some sanding operations, it is better for you and him that he should do so?

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What to Look for in Enamel

(Continued from page 117)

enamel is usually inadequate in all but the very best class of work. Even though a sufficient number of coats has been given, if the finishing one has been of white lead, this quality of good body is still necessary owing to the enamel white and the lead white being so diverse in color.

In testing the covering power of different makes of white enamel it is a good plan to apply them on a pink ground, as then any difference is readily detected.

Good Enamel is Applied Readily

This property might be taken as identical with that of flowing, but it is not always the case. Experience has taught that an enamel may flow quite well and yet be difficult to apply. Other than under the most favorable atmospheric conditions, a thing not to be reckoned on in ordinary finishing rooms, some enamels are tough, viscid and difficult to spread, and in consequence cause much loss of time. Of course, the finisher may "doctor" such an enamel, but that is not the point. It should not require special treatment.

The idea of the material in this respect is one, which though slightly tough, does not "pull" or "drag," or prove difficult to even apply, one that has the power of sticking where it is placed, thus lessening the liability of running. Of course, all enamels have a certain amount of toughness, indeed it is essential to their durability, but when toughness interferes with ease of application that particular enamel is to that extent defective.

This is much more important than many people

seem to think. Enamels which set and dry quickly are very liable to lose their lustre somewhat rapidly, while on the other hand, those which dry too slowly are liable to become specky, owing to atmospheric conditions and to dust. For practical purposes the best enamel, therefore, is one between the two, one which dries but is not thoroughly hard in twenty-four hours.

As far as hardening properties are concerned there is also a great difference. A good enamel should dry through and through and not merely on the surface. Generally speaking, the slower drying enamels prove the best in this matter, but to make a test it is only needful to coat some pieces of glass with the various enamels on hand and to try them with equal pressure of the thumb nail after they seem to be hard. Those which are thoroughly hard will not abrade so easily as the others.

When it is found that an enamel dries mainly on the surface, great care must be taken never to apply it thickly, as the defect is augmented thereby and liable to cause another defect, that of cracking, wrinkling or loss of lustre.

This property of thorough hardening is very essential to all enamels, but is doubly so to those used on wood or metal furniture.

In addition to the qualities above mentioned, all but the ordinary gloss enamels have other special properties. They must be capable of withstanding hot water, frequent washing and, to some extent, the action of a soap solution. There are some enamels which are required to stand a high degree of heat without injury to gloss or surface. These enamels are commonly used for bedsteads, metal furniture, etc., and are usually thoroughly baked before going on the market in order that the finish may be durable.

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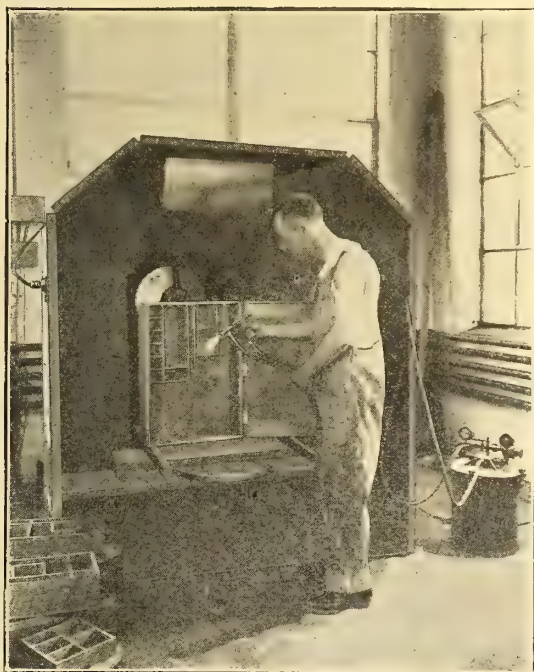
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New type "Aeron" with increased capacity

spray. The two sprays can be regulated from the full capacity down to the finest flow by simply turning the spray head. The trigger control and the fluid adjustments are accurate and instantaneous. This new type can be used with any paint or finishing material and develops a volume of spray that quickly covers large surfaces. The DeVilbiss Co. recently issued a new catalog which may be had on application.

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Honesty may be the best policy, but deliver me from the man who is honest only because it is the best policy.

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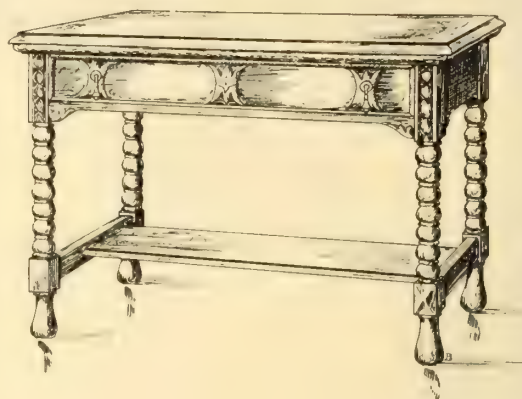
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Veneers AND Panels

Does Your Veneer Room Show a Profit?

Veneering Important Item in Modern Furniture Manufacture—Inefficiency Takes Big Toll in This Department

By C. H. Johnstone.

The veneer room is one of the most important departments in the furniture factory. Veneers are being used to-day more extensively than ever. There are many reasons that might be given for this demand for veneers and veneered products, such as the scarcity and high costs of fancy hardwoods, the marked shortage of the better grades of furniture, and the fact that built-up stock, in many instances, gives better satisfaction than the solid wood.

In spite of the added importance of veneered work and the fact that there is more veneering being done than ever before, it would surprise one to learn the number of manufacturers who are content to carry on this work as they have done for years—in some old little used corner of the factory and with methods and equipment that should have been scrapped long ago.

Not only is veneered work an important item in modern furniture manufacturing, but if not done efficiently may eat a fair-sized hole in the year's profits. Veneers may be thin, but they run into a considerable amount of money and should be used to every advantage. Glue may not be very expensive, but the amount wasted by inefficient methods would quickly pay for modern equipment. Time is one of the biggest items in this work and the savings that may be effected here are almost unlimited.

Old Methods Slow and Costly

It is amusing, and pitiful, too, to go into what is called the veneer room in some of the modern (?) factories. Here one finds workmen carrying on in a poorly lighted, out-of-the-way corner of the factory, working under the most adverse conditions and with little or no equipment. The veneer stock is kept in some store-room in another part of the building. When new material is wanted the workman must leave his work and take the time to go and get it. He probably finds that he has to keep another man standing around while he sizes the stock on the saw and displaces a man at the buzz until he joints it. He then returns to his corner and matches the pieces, tacking the veneers on a board and gluing paper or tape over the joint. The glue is applied with a brush and pressure put on with an out-of-date hand press, yet production is expected with these antiquated methods.

The veneering methods described above, are happily not followed in all plants and in all probability does not apply to yours. But is your veneer department run along the most efficient lines? Does your equipment include the latest labor-saving machines?

Have you given this department the attention it deserves and organized it on a production basis?

Modern Department Carefully Planned

The veneering department of a large manufacturer who is after results is found in a large, well-lighted room, where the workmen are not handicapped by poor light, poor ventilation and cramped quarters. The equipment is complete and up-to-date and arranged so that production and efficiency are secured.

The veneer and cross-banding is all carefully stored in a warm, ventilated room. Every precaution is taken in the storing and handling of the stock to eliminate, as far as possible, breakage and spoilage. The stock is ample and with a good assortment of sizes, enabling it to be worked to advantage with as little waste as possible. The different kinds and grades are piled separately so that any particular kind may be picked out without handling a lot of other material.

All the equipment needed to work up the material is located in the department. The crossbanding is cut to length, then edged and sized in specially constructed clamp attached to a saw table. The sawing is so accurate that the material is run through the taping machine without further correcting. The taped crossbanding is placed where it will be convenient for the man feeding the spreader.

The face veneers are cut to length and sized, then jointed on the veneer jointer. Before being taped they are carefully matched for figure and color. When taped they are placed convenient for the laying operation.

Caul Used on All Face Veneers

In laying up three-ply stock the core is run through the glue spreader, twice on a single roll machine and the face and back veneers laid by the men working behind the spreader. This makes very quick work as the material can be built up and the cauls placed almost as quickly as it can be fed through the machine. With five ply stock the best, though not the universal, practice is to lay the crossbanding on the core, put it under pressure and dry it thoroughly before laying the face veneers.

Whether animal glue, requiring heat, or cold vegetable or casein glue is used, better results are secured when cauls are used between all face veneers. When three-ply stock for drawer bottoms, etc., is being laid it is not necessary to use as many cauls.

The aluminum caul seems to be coming into general favor. The zinc and sheet iron caul is efficient but heavy and cumbersome to handle. The ease with which aluminum can be kept clean and its lightness commend it to those who realize that a few pounds difference in the weight of a caul or a few seconds more time required to clean one, has its effect on the output.

Hydraulic Press Gives Accurate Control

The press used is hydraulic, having a large capacity. With this the pressure may be applied quickly and

the gauge shows the exact amount of pressure that is being applied. The pressure is varied according to the size of the panel, thus insuring a constant per square inch pressure being used. With the hydraulic press there is a big saving in time and labor, but for those who have not sufficient work to warrant the outlay a modern power or hand screw press would prove suitable.

Retaining clamps are placed on the press load and the whole removed and run into the veneer kiln. An overhead track, fitted with a light chain block, is used for carrying the load from the press and dropping it in the kiln. This is a handy and economical way of handling work and can be used to advantage in many parts of the factory.

Sawing Veneers from Selected Oak

Indiana Plant of Long-Knight Lumber Co., Cutting Choice Materials—Mill Electrically Equipped With Individual Drive—Logs and Flitches Conveniently Handled

Many Canadian users of hardwoods and veneers are familiar with the quality of the stock supplied by the Long-Knight Lumber Co., of Indianapolis, Ind. This up-to-date firm operate a modern band-mill and at the present time have a large supply of northern grown logs stored in their yard.

They do not do any logging on their own account but purchase the better class of veneer logs from the small mill operators and timber brokers. This enables them to select none but the best grade of logs and ensures a product of high uniform quality.

The unloading and sorting of the logs in the yard is speeded up with the aid of a large derrick. The various grades are stored in separate piles so that any particular kind or grade desired may be picked out with little effort. From the piles the logs are taken to the mill where they are worked up on a 6 foot Sinker-Davis bandmill. Particular care is taken in sawing to cut the flitches so that they will show a good uniform figure.

The flitches are conveyed from the bandsaw by a system of gravity rollers, which drops them in rear of

The stock is left in retaining clamps for about twenty-four hours and then carefully piled with sticks for drying. The temperature and humidity of the kiln is very important, for when the air is dry and the kiln very warm it is likely that the face veneers will check. Instruments for recording the temperature and moisture content are provided and a careful watch is kept on the drying. When the work has reached this stage a considerable amount of time and money has been expended on it, too much to throw away as a result of careless handling when drying.

In such a plant every operation is handled in an efficient and business-like manner, and ample provision is made for turning out large quantities of built-up stock and at a low manufacturing cost.

figure. The plant is electrically equipped, each machine being driven by a separate motor.

In the drying of the stock both air and kiln drying is resorted to. When the stock is being air dried it is hung so that it will dry straight and true. When



Oak flitches for sawn oak veneers.

dry the veneers are carefully sorted and graded and are then packed ready for shipment.

The business has been in existence for 46 years having been founded by Henry C. Long in 1873. The present company was formed in 1898 taking over the business conducted by Mr. Long. The president and treasurer of the company is W. W. Knight.

Seven Glue Commandments

A well known chemist is the author of the following seven rules concerning the handling of glue:

Thoroughly mix each barrel of glue before using. Weigh the glue and water, don't measure it.

Avoid lumpy mixtures.

Avoid mixtures which are too thick or too thin.

Mix until all the fine particles dissolve and a smooth mixture is obtained.

Do not use glue after it becomes too thick to spread properly.

Do not attempt to thin or thicken glue after it leaves the mixer.



One of three veneer saws in Long-Knight plant.

the three veneer saws. Here they are cut into veneers of various grades and thicknesses. The accompanying illustrations give a good idea of these machines and show how the flitches are cut to secure a good

Can Swelling of Veneer Be Prevented?

Thin Stock Swells Quicker Than Thick Veneers—Spreading Glue on Thickest Stock Best Policy—Is Glue Responsible For Hair Line Checks?

By J. C. Taylor.

Perhaps the greatest need of the glue room is some means or process by which there can be prevention of veneer swelling from the moisture content of the glue while it is being prepared and before it gets under pressure. It is pretty generally agreed that once the stock gets under pressure very little, if any, swelling will take place under the influence of the moisture, because generally the pressure exerted is sufficient to hold the wood against such swelling.

For a definite solution of this problem, one of a positive nature, we will have to make a more thorough study than has been made heretofore of just what it is that causes wood to swell and shrink under changing moisture conditions. If it is largely a result of sap substance left in the wood, which takes on moisture, expands and thus produces swelling in the wood, then the drying process should include some means for extracting this substance, or at least enough of it to break down its influence until it will not cause serious change in the wood volume.

This is a study that will make a chapter or two of its own; and right now we are dealing with the subject of how to prevent, under existing conditions, so much swelling of veneer while it is being prepared for the press because of the moisture getting into it from the glue.

Determining the Amount of Swelling

Any glue-room man who wants to get definite data on this—that is, on how soon and how much a sheet of veneer will swell from the glue moisture—can get it by trying a simple experiment. Let him take a sheet of veneer, say 12-in. wide or more, and measure the width very carefully. Run it through the glue machine, then take careful measurement of its width, say in two minutes, five minutes, ten minutes and fifteen minutes. In this way he can get at not only the amount of swelling that takes place, but also at what time the swelling starts and how rapidly it progresses.

If he will experiment with different thicknesses, say 1/20, 1/16 and 1/8-in., he will very likely find that the thinner the stock the sooner it will start swelling. And that is the thing which gives us a clue to one way through which we may at least reduce the swelling.

Generally, the corestock is thicker than the face veneer. Sometimes it is thick veneer and at other times it is made of solid lumber. The answer is to spread the glue on the corestock instead of on the surface of the veneer. The reason is it will not be able to penetrate into the corestock and develop swelling as quickly as it will in a thin sheet of veneer. True, when you run a core piece through the glue machine, then put a sheet of veneer on it, the veneer will take up some of the moisture from the glue, but there will be a little gain in time before the thin veneer is taking on the moisture, thus there will be some prevention of swelling in the veneer.

It logically follows that in making up plywork, where all the veneer sheets are comparatively thick, there will be less swelling than when very thin ven-

eer is used, within a given period of time between the glue spreading and getting under pressure. This is a point which it is well to keep in mind, because while you may take the time to deliberately pile up a good press full of stock in heavy veneer, when it comes to the use of thin veneer, like fine face, it must be gotten under pressure quickly. Otherwise, some swelling will take place in the face veneer regardless of whether the glue has been spread on the corebody or on the veneer itself.

A little time that is well worth while is gained by spreading the corebody instead of the face veneer, but even at that, quick action is the remedy under existing conditions for that swelling under glue moisture, which will be followed later when the stock dries out by a tendency in the face veneer to shrink, and this may develop a series of fine cracks that impair the beauty of the wood and spoil the job.

To refer again to the suggested experiment of spreading one side of a piece of thin veneer with glue and then laying it aside to note what takes place, it will be found that among other things warping will take place. The face on which the glue is spread will expand almost immediately and this will cause it to hollow up. Eventually as the moisture penetrates through and balances itself up in the veneer this warping will be relieved somewhat and in the final drying out it may reverse itself; then again it may not. There are some odd happenings here at times which are well worthy of experiment and study.

Stock Does Not Straighten Out

If the wood happens to be of an open, porous nature and the glue thin, on the final drying out the face which has the glue spread on it may shrink even more than the face left without treatment. The logical explanation of this is the shrinking together of the glue which by adhering to the cell walls in the wood draws the wood itself closer together, thus causing a concave on that side where at the original spreading it convexed. On the other hand, there may come instances where the wood is fine-grained and as a result of glue penetration, enough glue body will remain in the voids or spaces among the wood fibres to prevent this shrinkage back to the original size, in which case the dried-out sheet will remain convex on the side on which the glue is spread.

If a thin sheet of veneer is spread on both sides alike with glue then a balance is obtained, and while there may be some wrinkling this will be due to uneven strains set up in different parts of the sheet of veneer by the moisture. The tendency, as a whole, will be to remain flat. Also when it dries out it will be better balanced than if glue is spread only on one side, and though wrinkling and warping somewhat from uneven strains set up in the wood itself, will not do the same kind of warping as is the case when only one side is spread.

Does Glue Cause Check?

The idea in pointing this out is to suggest a line of experiment and research. This line of research would have to do with coating or spreading the outside of a sheet of face veneer with a filler or some-

thing to counterbalance in effect the glue spread on the inside and thus maintain a sort of equilibrium in the wood which would be some safeguard against fine face checks. For example, if the effect of the glue is to keep the glued side of a piece of face veneer expanded somewhat even after the moisture has been dried out, because of the voids in the wood being filled with glue, then it puts a strain on the face which may result in fine hair-line checks. If the voids in the face side could be filled at the same time as those on the other side with glue, or with a substance similar in its action and reaction, then the face would be permanently expanded comparable with the glue side and no strains would be set up to produce those ruptures which we recognize in the form of cracks.

It may be that some day, through research work along this line, we will develop a glue substance which will also make a good wood filler for the face, in which case both sides of a sheet of veneer could be spread at once and everybody be happy. Meantime, however, what we need is to give more attention to practical ways and means for keeping down swelling in the veneer between the time it is spread with glue and put under pressure.—"Veneers," Indianapolis.

Tests for Water Resistance of Plywood

A simple water-resistance test for the use of manufacturers of water-resistant plywood is the one developed in the early experiments with this material at the Forest Products Laboratory, Madison, Wis.

Test specimens, 5 inches square, are sawed out of the sample so that they are at least one inch from the edge of the panel. A specimen is placed in boiling water for eight hours, and upon examination at the end of that time should show no separation of the plies. A more prolonged test is made by the immersion of a specimen in running cold water. The soaking is continued for 10 days, during which time there should be no separation of the plies.

For an actual strength test of boiled or soaked plywood, a specially cut specimen and a testing machine are required. Descriptions of these may be obtained by addressing the director of the laboratory.

Plywood grades for Navy aircraft panels have been established which require specimens tested for water resistance to exhibit a generous percentage of their dry shearing strength. The prescribed values are as follows:

	Grade A Plywood With cores 1 16" or less in thickness	With cores over 1 16" in thickness	Grade B Plywood
Tested dry	325	300	225
Tested wet after 10 days soaking in water at room temperature	200	180	90
Tested while wet, after 8 hours boiling in water	200	180	65

Efficient Handling of Animal Glue

By C. J. P.

In few shops does animal glue receive the attention that it deserves. If it were like some glues that lose their adhesiveness quickly the workmen would find it necessary to use a greater amount of judgment in preparing and handling it.

After being cooked once animal glue deteriorates with each successive heating. The second time it is warmed up it is not as strong as it was originally. In spite of this, much of the glue that is

being used has been heated repeatedly for days and days.

We do things differently in our shop. We have sufficient pride in our product to want to use none but the best materials and each in the best possible condition. This applies to the glue used.

The quantity required each day is known and sufficient glue for the day's run is mixed fresh each night. One man looks after this item, in addition to other work, of course, and he has it worked down to a fine science. He does not do any guessing, but weighs out the necessary quantity of glue and measures sufficient water with which to soak it. In the morning, when he cooks it, in the large heater provided, he knows just how much water to add. The result is that the glue is always uniform and at its full strength.

We find that there is less glue wasted when this method is followed, and the smaller pots are kept clean and free from hardened glue.

The three essentials to high efficiency with animal glue are—freshly cooked glue each day, uniform mixture, secured by weighing, not guessing, and careful regulation of the temperature, from 125 to 145 degrees, but never above the latter figure. Simple, isn't it?

Flat Panels and No Surface Checks by Maximum-Humidity Method

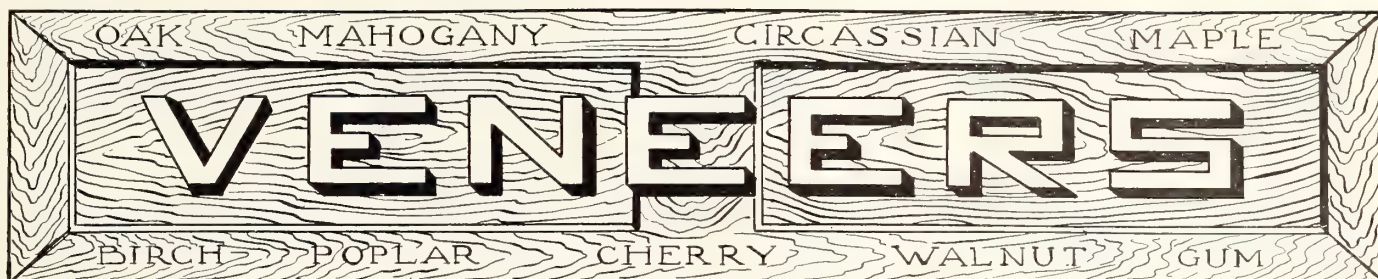
If panels are over-dried their tendency toward warping and twisting is greatly increased. The lower the moisture content the more the warp. The short time required for drying panels varying from a few hours for thin panels to a few days for thick ones, makes it impracticable to make actual determinations of moisture content to decide when the material has reached the desired degree of dryness.

An automatic method of insuring the proper moisture content in dried panels is proposed by the Forest Products Laboratory. This is what may be called the "maximum humidity method," in which the relative humidity of the air in the kiln or drying room is regulated so as to remain at the highest level which will permit the wood to dry to the desired degree (and no further) in a reasonable length of time. By this method, checking the face veneer is also prevented.

The maximum-humidity method lends itself to the most convenient and economical handling of the panel-drying operation. As there is little danger of over drying, the stock may be left in the drying chamber for any reasonable length of time beyond the minimum required. Thus, thin panels and thick panels may be taken from the press and placed in the kiln at the same time, and removed at the same time, even though the thin panels dried much quicker.

For panels made up of normally dry veneer, a kiln temperature of 120 degs. F. throughout the drying period is a good schedule to follow. If with this temperature the humidity is maintained at 46 per cent., the panels will come uniformly to a final moisture content of about 8 per cent. within a reasonable drying period. If the same temperature is used and the humidity is maintained at 57 per cent., the panels will not dry appreciably below 10 per cent.

With a three-drum sander, the first roll should do the cutting, the second should remove the scratches, and the third should give the polishing finish.



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PANELS

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5 Million feet for Immediate Shipment
Any Kind of Wood Any Thickness

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a complete stock of panels.

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Give your business to the man who will spend his time and money to get in touch with you. He deserves it—if his stock and prices are right.

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The Northwestern Cooperage & Lumber Co., Gladstone, Mich.

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Manufacturers of

"PEERLESS" ROTARY CUT VENEERS

in Birch, Elm, Basswood, Maple, Ash and Beech for all purposes

Also hoops, liners and staves for manufacture of packages

Also "Peerless" Rock Maple, Beech and Birch flooring; Hemlock lumber; Lath, etc.

"Peerless" products are standard everywhere and you are always exercising Safety First in using them. Try us next time.
(When writing mention Canadian Woodworker)

Gluing Up Veneers in Canadian Plant

Panel Plant of Toronto Veneer Company Busily Engaged Turning Out Wide Range of Stock - Modern Equipment Installed and Latest Methods Used

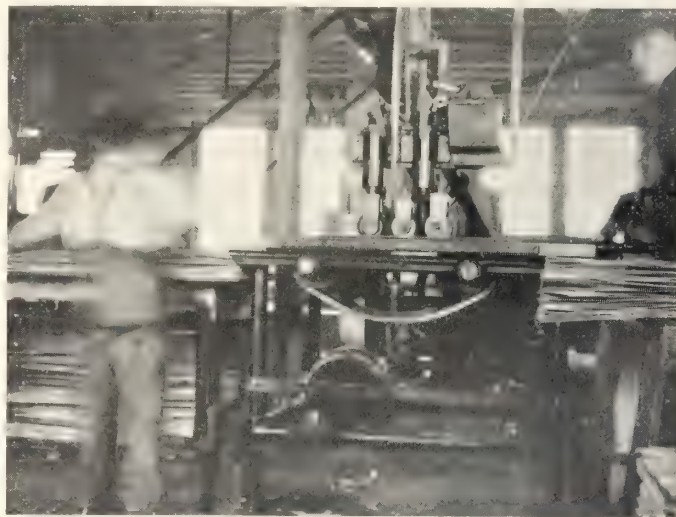
One of the busy spots in Toronto is the panel plant of the Toronto Veneer Co., Limited. This plant was installed, early last spring, to take advantage of the exceptionally strong demand for built-up panels. That the move was a wise one is shown by fact that the orders on hand tax the capacity of the plant to the utmost.

The equipment includes the following machines: 48" American bandsaw, 48" Jackson-Cochrane three-drum sander, Perkins glue mixer and spreader, Preston veneer taping machine, swing saw, double cut-off saw supplied by the A. R. Williams Machinery Co., buzz planer, belt sander, veneer press, etc.

The crossbanding, core stock and face veneers are cut to length on the swing saw and then sized on the band saw. The superintendent stating that he finds that it is possible to rip a greater amount of veneers in a day on the band saw than on the circular saw. The material is jointed on the buzz planer, special

dried for about three days, while the thicker pieces remain in for a week.

The double cut of saw is used for sizing the glued-up panels. A man and a helper handle the stock here



Busily engaged taping stock on Preston veneer taping machine.



Sanding veneers on a Jackson-Cochrane sander.

clamps being used to hold a quantity of stock. The taping is all done on the Preston machine.

After taping the material is run through the glue spreader, receiving a good coat of Perkins vegetable glue. The three and five ply panels are glued up in one operation. A certain amount of seven ply is made. When gluing this a three ply core is built up and after the glue has dried, is run through the sander before the other plys are laid on.

Three ply cauls in various sizes are used. It is found that once they are thoroughly oiled they stand up for a long time and are easy to keep clean. When laying face veneers a caul is placed between every panel, but when drawer stock, etc., is being glued, a caul is placed between every four or five pieces.

The stock is left in the retaining clamps for twenty-four hours. It is then carefully piled, with sticks, on trucks and run into the dry kiln. The length of time the panels remain in the kiln depends entirely on the thickness of the panels. The three-ply pieces being

and are able to size a large number in the course of a day. The final operation is the sanding of the face veneers.

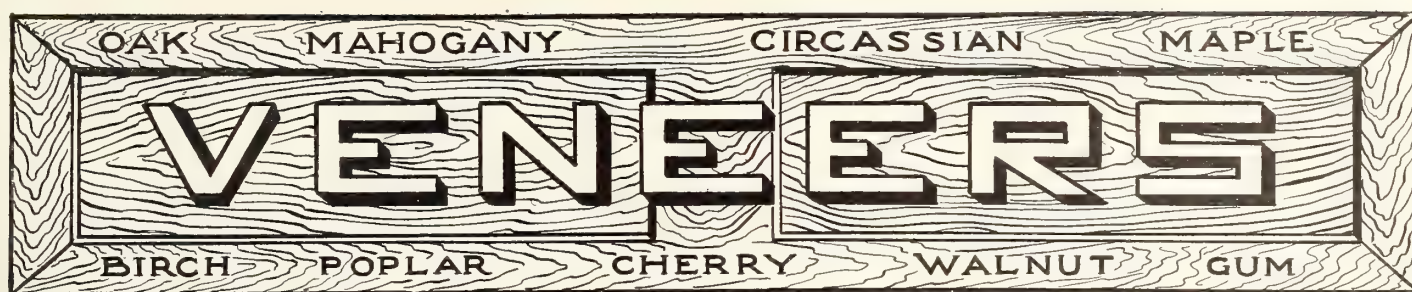
All grades of panels are turned out, including walnut, oak, gum, mahogany. In addition to the better grades, drawer stock and panels for the backs of dressers and other cases are turned out in poplar, gum, chestnut and birch.

If the present demand continues it is likely that



Perkins glue spreader in plant of Toronto Veneer Co.

larger quarters will be secured and new equipment added in order to take care of a greater proportion of the business that is to be had.



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Sawn Quartered White
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Sliced Quartered White
Oak Veneer

Sliced Quartered
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Cross Banding and
Thin Veneer

Two Plants: Each specializ-
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product.

**Evansville Veneer
Company**

Evansville, Indiana

QUALITY A MATTER OF FAMILY PRIDE FOR -

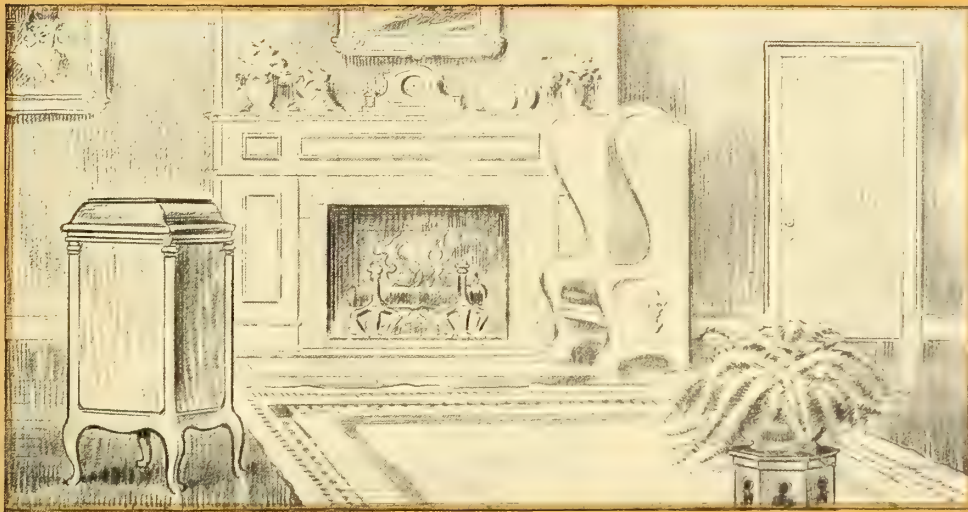
fifty-two years. In the more than half century during which this business has been run by succeeding generations of the same family, each generation has succeeded to an augmented tradition of quality product and has in turn made every effort to add something to the surety of that quality so that the heritage of family pride which it hands down might be strengthened—not merely stationary. Obviously this has called for more than a never-failing personal supervision of all phases of the business and the adoption of all available improvements in equipment. To fully succeed in living up to the family principle of a constantly improving product it has been necessary to **create** improvements in equipment, in methods and in personnel. The result has been that many of the most striking improvements in the machinery and methods employed in the cutting of high grade hardwood lumber and veneers have come from this plant where fifty years ago the founders of the business invented and installed the first band mill ever used. With the quality of the logs available today every whit as good as those cut fifty years ago, is it any wonder our books have for years carried the majority of the most careful buyers in the country?

HOFFMAN BROS COMPANY

FORT WAYNE INDIANA

Northern Grown Oak American Beauty Walnut





Birch Veneers in the Living Room

THE old fashioned "front parlor" has been superseded by the modern living room, the family gathering place which requires durability as well as beauty in trim and furniture. No other wood has contributed half so much to this development as has birch, and the full utility of birch in this need could not possibly have resulted without the greater adaptability and range of use lent it through birch veneered panels.

Birch panels, to give full satisfaction, must be made right and of the best veneers—the BeVeCo kind. Every foot of our veneers is the product of the most modern of veneer factories, contented, experienced workmen and the cream of a full selection of upper Michigan veneer logs.

Our guarantee of service is a constantly complete stock of *birch*, *plain maple* and *birds-eye veneers* and a conscientious desire to give courteous and efficient handling to *all* orders.

BIRDS EYE VENEER COMPANY

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Not How Cheap, But How Good

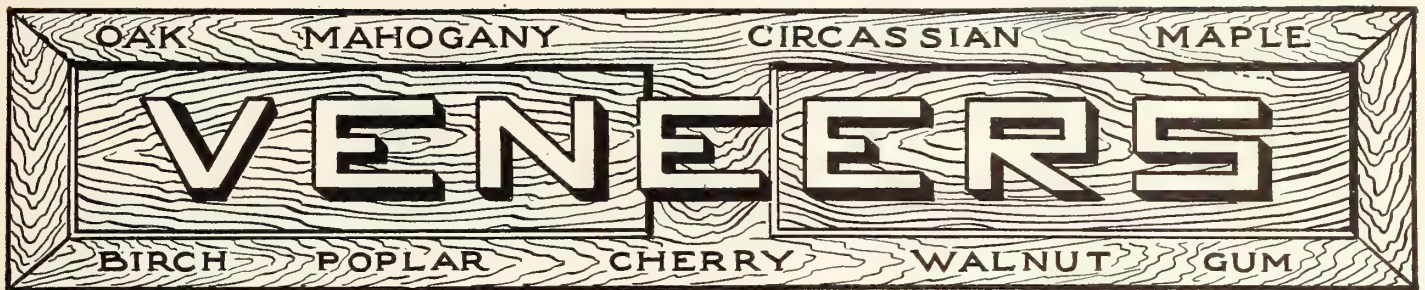
HERE are plain reasons why it will pay you to consult us always when in need of birds-eye maple, plain maple or rotary cut birch veneers. Not only do we limit our manufacture to the highest grade of product but we strive toward a constant co-operation with our customers so that the merit of BeVeCo veneers, through our efficient, prompt and courteous handling of customers' orders, will contribute to the fullest extent in helping each customer build up his own reputation for goods of merit.

All our veneers are from prime *veneer logs*, not *woods run logs*, grown in northern Michigan. When you place your order with us you are absolutely certain of getting veneer made from the cream of the best logs known to the veneer business, a certain guarantee of beauty, permanence and uniform refinement in appearance.

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Lumber - Dimensions - Veneers

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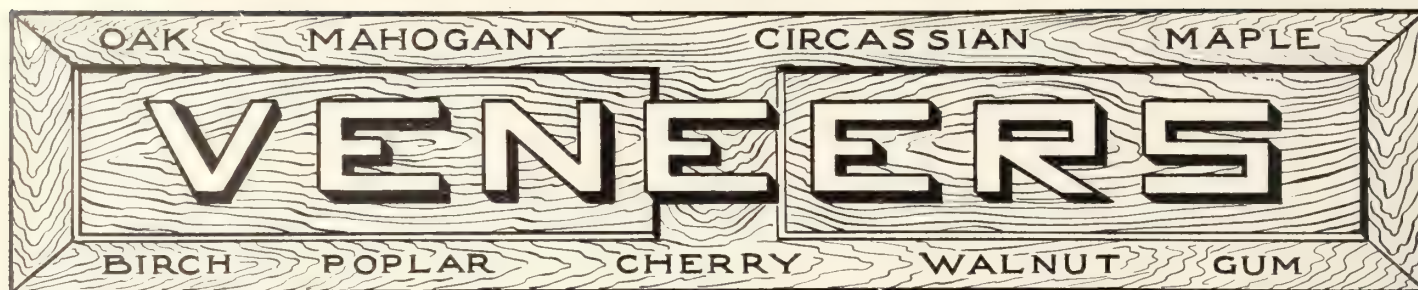
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Manufacturers of all kinds
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Carrying a large stock of
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Figured and Plain Walnut, Walnut
Butts, Sawed and Sliced Quar-
tered Oak and Sycamore and all
other native woods.

**1,000,000 Feet Quartered Red
Gum to select from**

CAN fill rotary-cut gum orders promptly

WE Respectfully solicit your inquiries

In the Rush of Increasing Demand for Veneers

The natural tendency is for manu-
facturers to strive toward a greater
output often at the expense of
quality.

This is a mistake which the Law-
renceburg mills are carefully
guarding against and buyers may
be sure that in ordering "BATES-
VILLE QUALITY" Veneer they
are getting goods manufactured
in strict accordance with that
standard of quality maintained for
so many years.

Batesville Lumber and Veneer Co.
LAWRENCEBURG, IND.

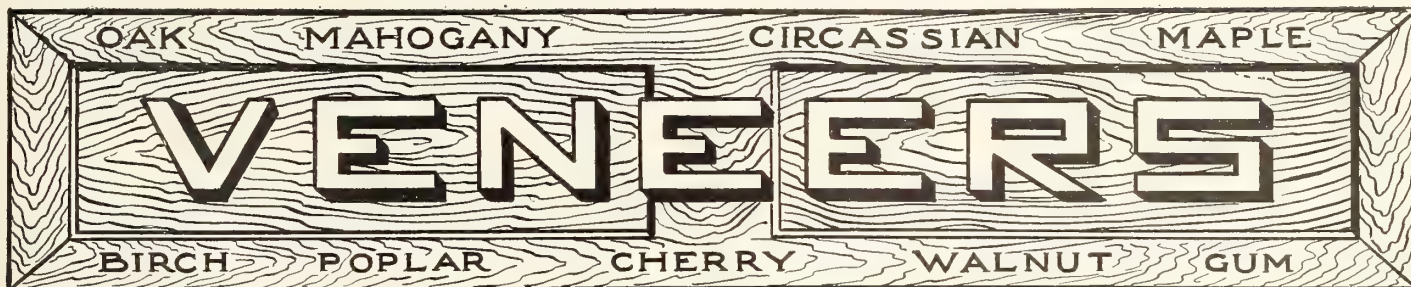
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The following Stock on hand ready for shipment;

QTD. WHITE OAK		SAP GUM		ASH	
30,000'	4/4 No. 2 Com. & Better	205,000'	4/4 No. 1 Com. and Selects	15,000'	4/4 F.A.S.
		250,000'	4/4 No. 2 Com.	30,000'	4/4 No. 3 Com.
PLAIN WHITE OAK		175,000'	5/4 No. 1 Com. and Selects	15,000'	5/4 No. 3 Com.
30,000'	4/4 No. 1 Com. and Selects	165,000'	4/4 No. 3 Com.	19,000'	8/4 No. 3 Com.
75,000'	4/4 No. 2 Com.	75,000'	5/4 No. 2 Com.	15,000'	5/4 No. 2 Com.
		15,000'	6/4 No. 2 Com.	36,000'	8/4 No. 2 Com.
		30,000'	5/4 & 6/4 No. 3 Com.		
ELM		PLAIN RED GUM		SOFT MAPLE	
30,000'	12/4 Log Run			15,000'	12/4 Log Run
20,000'	6/4 Log Run	15,000'	4/4 F.A.S.		
50,000'	4/4 No. 2 and No. 3 Com.	129,000'	4/4 No. 1 Com. and Selects	PECAN	
				14,000'	4/4 Log Run

We have four million feet of dry lumber on our yard at Helena, Arkansas, ready for prompt shipment

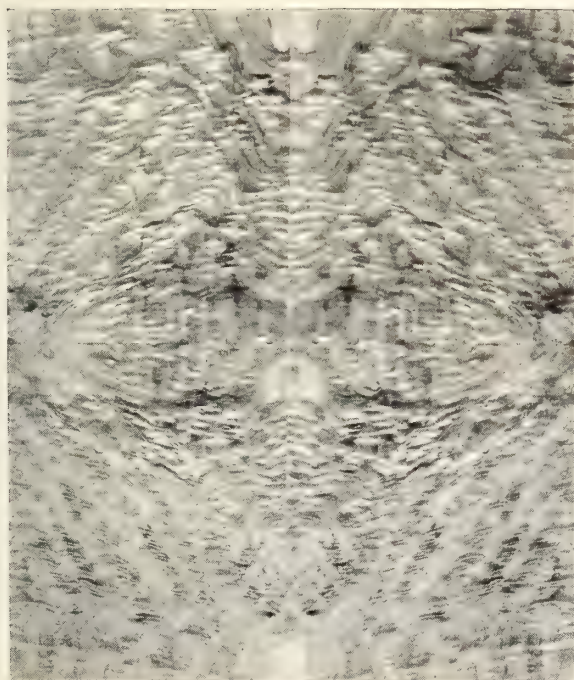
Your Orders will be given "P-J" Service

We solicit your inquiries

General Offices
 Memphis, Tenn.

PENROD-JURDEN COMPANY

Mills
 Penjur and Helena, Ark.



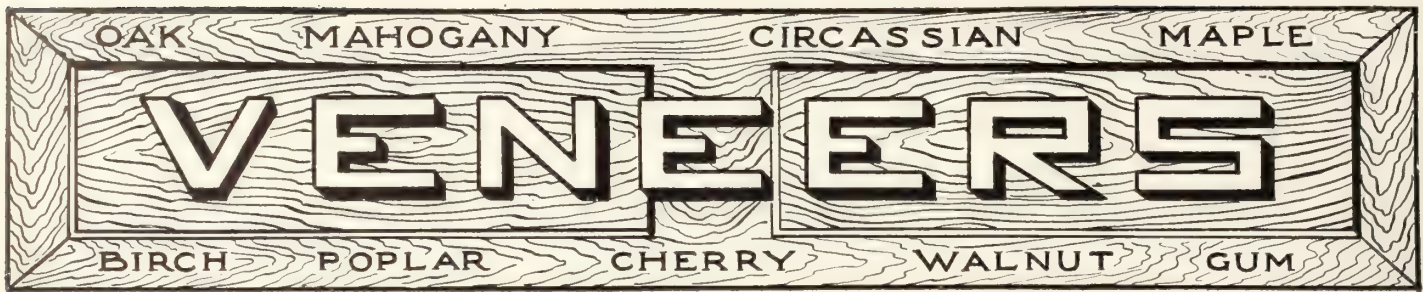
Walnut Lumber For Sale

		FAS		Selects	No. 1 Com.	No. 2 Com.
		6" to 9 3/4"	10" & up			
1/2"	.. ..	20,000	8,000	.....	30,000	5,000
5/8"	.. ..	25,000	20,000	.....	8,000	3,000
3/4"	.. ..	30,000	4,200	.....	13,000	3,500
4/4"	.. ..	40,000	7,000	5,000	35,000	23,500
5/4"	.. ..	35,000	2,300	2,500	10,000	25,000
6/4"	.. ..	28,000	4,800	7,500	14,500	22,500
8/4"	.. ..	21,500	1,500	16,600	23,200	42,500

WRITE US FOR PRICES

We also have everything in Walnut Veneers.
 Write us for samples and prices.

Penrod Walnut and Veneer Co.
 Kansas City, Missouri, U. S. A.



THE OHIO VENEER COMPANY

Importers and Manufacturers

Foreign and Domestic Veneers and Hardwood Lumber

We always carry a large and assorted stock of Mahogany, Circassian
Walnut, Sawed and Sliced Quartered Oak.

Send us your enquiries and orders. We guarantee good service.

2624 to 2644 Colerain Avenue, - - CINCINNATI, OHIO.

Mahogany Lumber Mahogany & Walnut Veneers

Located close to the source of supply down in New Orleans, we have an up-to-date, well-equipped mill, exclusively employed in cutting into Lumber and Veneers the fine Mahogany logs our ships bring in direct from the tropics.

The Freiberg Lumber Company
CINCINNATI, OHIO NEW ORLEANS, LA.

NATIONAL VENEER & LUMBER CO. ROTARY-CUT POPLAR

Large Sizes, up to 10 Feet in Length

AMERICAN WALNUT VENEER
Long Wood and Butts

QUARTERED WHITE OAK

1635 West Michigan Street

INDIANAPOLIS, INDIANA

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VENEERS

Of Quality and Beauty

From our complete stock, which includes Sawed and Rotary Veneers, Poplar Cross-banding and Sheet Stock, Walnut Butts and Longwood, Quartered Oak, etc., we can meet your needs promptly and perfectly. You are assured of the maximum of quality and beauty in our veneers. For your most particular work our complete stock is sure to prove entirely satisfactory. Let us prove our ability to handle your business—to give the efficient service that you desire. Write us to-day.

W. T. Thompson Veneer Co.
EDINBURGH, INDIANA, U.S.A.

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Advantages of Aluminium Cauls

One of the highest forms of craftsmanship in connection with the manufacture of furniture lies in the production of large veneered surfaces such as the top of a grand piano or table. The highly polished effect is dependent almost entirely upon the veneer being glued and pressed absolutely true and flat upon the wood beneath. When the veneer is placed in the press therefore, it is necessary to cover it with a plate of some hard unyielding material whose surface is dead true. Of course a number of veneers are pressed at once having these plates or cauls between them. Sometimes the cauls are of wood faced with a thin sheet of zinc. This kind of caul is not entirely satisfactory for the wood being thick it is not possible to get many pieces in before the press is filled up. Furthermore, with such a caul the glued veneers soon cool off whereas better results are obtained if they are cooled more slowly. Thick zinc cauls dispense with wood and being thinner allow of more work being pressed at once, but their weight is a great drawback. Zinc cauls $\frac{1}{8}$ in. thick weigh more than four and a half pounds to the square foot, so it can easily be figured how much labor is involved in handling large cauls.

This was the first reason why aluminium was adopted for veneer cauls; it is only about one-third the weight of zinc and calls for much less trouble in handling. Generally, too, it costs much less than three times as much per pound, so it is much cheaper for any given size of caul. But there is another advantage too; aluminium cauls appear to cool much more slowly than other materials so that the glue dries out more uniformly. The caul surface is non-adhesive and takes a high polish; this makes it easy for any small particles of glue to be scraped off.

Aluminium sheet has also been adopted by many of the largest manufacturers for the covering of kitchen cabinets and tables, the lining of refrigerators and incubators and the covering of sink shelves, etc. For these purposes it is superior to zinc, as it will not corrode or rust and will retain its silvery color almost indefinitely. The cost is no higher than that of zinc and in some cases lower.

Among the many purposes for which aluminium is eminently fitted in house construction may be mentioned door-panels, mouldings, window casings, partitions, wainscoting and all forms of trimming. The advantages to be gained by substituting aluminium for wood in these interior finishings are that it is absolutely fireproof, cannot warp or crack, is vermin-proof and can be readily painted to simulate oak, mahogany or other woods at about one-third the cost of painting wood as owing to its non-absorbant surface fewer coats of paint are required.

Setting Blood Albumin Glue in Kiln

The high water resistant qualities of blood albumin glue would make it very valuable for gluing thicker stock than plywood, when such stock is to be used under moist atmospheric conditions. An obstacle in the way of using this glue in ordinary joint work, however, is the fact that to coagulate and set it a temperature of 160 deg. F. or more is required. In the manufacture of plywood with blood glue the joint is made in a hot plate press, but this method is not feasible for heavy stock.

Recent experiments at the Forest Products Labora-

tory, Madison, Wis., point to the possibility of setting blood glue satisfactorily in a kiln. Heavy blocks were glued up with blood glue in the usual manner and put under pressure with retaining clamps and I-beams. They were then placed in a kiln and subjected for several hours to a temperature of from 175 deg. to 200 deg. F. A relatively high humidity was maintained in order to prevent loss of moisture from the blocks and an accompanying decrease in the pressure.

When the glue was applied to cold wood, from 15 to 18 hours in the kiln were required to set the glue. When the wood was heated to 150 deg. F. before gluing, the length of time the stock had to be left in the kiln was much reduced. Two hours at a temperature of 200 deg. F. were found sufficient to set the glue in blocks $7\frac{1}{2}$ inches thick, consisting of 3 laminations.

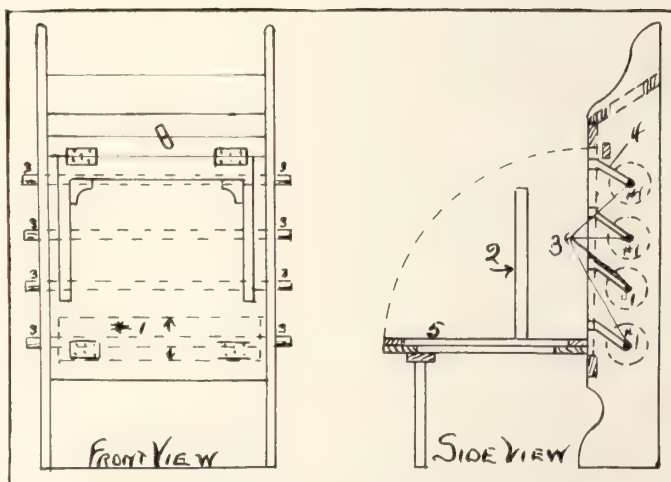
Severe soaking and drying tests were afterwards given these blocks, and except for slight checking on the unprotected ends, the glue line remained intact. The shearing strength (on black walnut blocks) previous to the soaking tests averaged 1670 pounds per square inch, with 80 per cent. wood failure. When tested wet after soaking for 3 days, they gave an average strength of 1280 pounds per square inch, with 42 per cent. wood failure.

Convenient Sandpaper Cabinet

By A. Hudson.

In spite of all that has been written upon the care of sandpaper there are still some factories where this material is sadly neglected. In addition to the amount of material that may be saved with suitable equipment, a saving may be effected in the time ordinarily required to cut and handle the rolls.

The accompanying sketches outline a sandpaper cabinet that will be found very useful and convenient. When used the edges of the paper will be preserved



Cabinet for holding sandpaper.

and a minimum of storage space required. The following detail will fully explain the drawing. No. 1 shows the rolls of paper in place, 3, the iron pipes which carry the rolls and which slide into the cabinet through the slots 4.

The front of the cabinet swings down, forming a table. The straight edge, No. 2, is hinged and is brought down on the paper. The distance from the straight edge to the stop at the edge of table is the length required for the drums, so the paper is cut along the straight edge.

Veneers



Panels

Veneers



Panels



Finish Perfection—

—is a vital factor in the manufacture of furniture, panel work, etc. Smooth, perfect surfaces of beautiful designs that do much to give that artistic touch of beauty and style that is so greatly in demand at present.

From our large, bright stock room you may personally, if you so desire, carefully select your own requirements or we can fill your order from letter, wire or telephone call promptly and exactly as you desire. Our service will mean much to you. We carry a complete range of American Walnut, Mahogany, Quartered Oak (in all thicknesses), and Figured Gum Veneers, Rotary Cut Veneers, in all the popular woods. Let us know your needs.

Toronto Veneer Co., Ltd.
1100-1104 Queen St. W. ————— Toronto, Ontario

Veneers



Panels

Veneers



Panels

Sander Installed in Veneer Room

By C. J. P.

Inequalities in the thickness of the core, whether it is rotary cut, straight cut or cross-banded, is a fruitful source of trouble from loose veneers and from the sanding through of face veneers. Many manufacturers attempt to overcome this by putting a caul between every panel. This is a good practice and should be adhered to, but it does not entirely do away with the faults experienced.

In our veneer department we have installed a three-drum sander and make a practice of sanding all core stock before laying it up. When gluing five ply we sand the crossbanded core on both sides before we lay the face veneers.

Since we have adopted this policy we have been practically free from trouble on the score of loose veneers and veneer sanding through and feel that we are more than repaid, by the saving effected, for the additional outlay for sanding. It is not necessary to have the sander installed in the veneering room, but it is certainly much handier and saves many steps in the course of a day.

Fixing the Cause of Glue Failures

Glues are often blamed for failures for which they are not responsible. Tests made at the Forest Products Laboratory of the U. S. Forest Service at Madison, Wisconsin, show that properly handled commercial glue develops a shearing strength greater than that of most woods.

The average glue user prepares his glue with reasonable intelligence but commits atrocities in preparing

surfaces to be glued and in handling pieces after gluing. To get full strength from any glue, proper surface contact is imperative. Good glue will adhere fairly well even with poor surface contact. Joints of this kind possess, however, inherent weakness and the added disadvantage that they are more liable to ruin through bacterial action than tight joints, since the glue in them is more exposed.

The proper application of pressure is important in all glued work but doubly so in the manufacture of plywood. Securing proper pressure involves keeping cauls and press in first-class condition and using them skillfully. With the hydraulic press it is easy for careless or ignorant workmen to spoil a batch of stock by applying too much pressure and starving the joint.

Plywood failure may often be traced to unevenly surfaced cores. Planer work should be watched carefully and calipered frequently. A low spot in a batch of cores will mean that insufficient pressure will be obtained in that place and loose plywood or blisters may result.

Taking chances in storing and shipping glued products causes many failures. Work is frequently improperly dried and is then expected to hold together in damp rooms. Glue attains its full strength only when it is thoroughly dried. This necessitates removing the moisture absorbed from the glue by the wood. Glued work should be placed where there is a chance for good air circulation. After drying, average shop conditions should not cause failure.

It is claimed that posts made of many layers of wood are quite as effective as one solid piece.

WALNUT and Quartered VENEERS White Oak

AND LUMBER

Prompt delivery

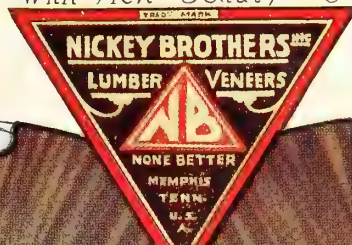
LONG-KNIGHT LUMBER COMPANY

INDIANAPOLIS, IND.





N.B. QUALITY
Figured Red Gum Veneer
Combines Great Usefulness
with rich Beauty



NICKEY BROTHERS, INC.
MEMPHIS, TENN.

There is Value in Appearance—



**Write for Samples
and Prices**

A PPEARANCE is a prime factor in the sale, either of a panel or of furniture, to both dealer and consumer.

Good workmanship enhances appearance, but the fundamental cause of it lies in the material of which the article is made.

Care, then, in the selection of face veneer is most important in the production of all fine work where veneer is employed.

In selecting N. B. Quality Veneer you are assured of the appearance which you desire in your product.

The cause of N. B. Quality lies in careful selection of good logs from an unlimited field of supply, proper manufacture and close inspection.

Concentrate Your Purchases and Save Money

Through Buying

Sliced Figured Red Gum, Rotary Cut Gum and Poplar Veneer
Sawed and Sliced Ash, Poplar and Gum Grand Piano Rims
Sawed and Sliced Quartered Oak.

In Cars with Band Sawed Hardwood Lumber

Carload buyers get closer prices, save freight on local shipments,
and eliminate damaged goods.

NICKEY BROTHERS, INC.

MEMPHIS, TENNESSEE

Progressive B. C. Furniture Company

Another furniture factory that is doing a splendid business at present is also located in the Terminal City. This concern, that of Thomas Bennett & Son of Union street, has been running continuously for the past year and a half. They use B. C. fir, spruce and cedar in large quantities, their average monthly consumption being approximately 12,500 feet. This is divided up into 5,000 feet of fir, the same quantity of cedar and the balance in spruce. The principal articles manufactured by them are—bed-lounges, couches and chairs and for all of these there is a good demand in all parts of British Columbia, but

The Final Appeal

Do your Christmas shopping early, do it early, mother dear, buy those gift cigars for father ere the cabbage leaves are sere; get the fancy ties for brother, all hand painted, nice and sweet, while the holly's in the window and the jumcracks fill the street. Buy the cook an inlaid poker, lift the milkman from the dumps, get him, mother dear, some ribbons—pale pink ribbons for his pumps. Let us then be up and doing, bright and early, mother dear; we must buy cut glass and china for our brothers' Christmas cheer; we must do our shopping early, buy the toys with pizened paint, so that dearest little Willie may curl up and be a saint. Hook me up, my dearest mother; put my state wide hat on straight; we must hasten, we must hurry, or we'll be—alas—too late; ere the celluloid cuff boxes and the plush-bound tomes of lore, and the four-cent Christmas greeting all are gone for evermore. So let's hustle, dearest mother, let us swiftly hit the pike; to our Christmas shopping early let us make a gentle hike.

WALT MASON.

particularly in Vancouver and the adjoining towns. Vancouver Island is another strong market for the Bennett company.

One of the principal items made by them is the novelty wardrobe, constructed of fir, the beautiful grain of which is shown to the best advantage in this piece of furniture. They are booked up with orders sufficient to last them for the next six months, and Mr. Bennett stated in answer to an inquiry as to the future that he anticipated a very busy time for some years to come in view of the tide of immigration to this part of the world, and the necessity for providing furniture to meet their requirements.

Taking it from all angles, the furniture-making business was never so busy or so prosperous as at present. There are good markets for the local products and no let-up is anticipated in the quantity made, at least in the immediate future. There exists, as already pointed out, some slight difficulty in securing the raw material and the employees, but these matters are expected to right themselves at time goes on.

Turnings Demanded by Cuban Trade

Wholesale druggists in Havana state that wooden containers for pharmaceutical products are now being used on account of the scarcity of tinned iron. They state that most of these goods are bought from

the United States, but think that Canada could compete in this market. Different sizes of wooden pill-boxes are used, but not for pills but for different kinds of ointments. Pills, for the most part, are put up in cardboard boxes, as these are much cheaper. They also make a quantity of wooden bottles for putting up homeopathic remedies and for sending fragile articles by mail.

Large quantities of handles for carrying parcels are also used. They are made with a round piece of wood for the hand, wire is put through and doubled down with a hook at each end to fasten on the parcel. Many dealers have their firm name and some kind of small advertisement stamped on these wooden handles, which they say they would require to have done where they are manufactured.

There is a large market here for broom handles, also handles for different kinds of tools, such as pick-axes, hammers, etc.

McLagan Furniture Factory Changes Hands

A newly incorporated company, known as the McLagan Furniture Co., Ltd., was recently formed to take over the interests of the McLagan Estate in the George McLagan Furniture Co., Limited, The Strat-



Attractive buffet in mahogany or walnut from the McLagan line.

ford Chair Co., Ltd., and the Meaford Mfg. Co. The officers of the new company are,—D. M. Wright, President and Managing Director; W. K. Trower, Montreal, Vice-president; H. S. Robertson, Secretary-treasurer. In addition to the above mentioned the following comprise the board of directors,—R. S. Robertson and L. M. Green, both of Toronto. W. J. Anderson will continue as manager of the Stratford Chair Company.

Canadian Rights to Lloyd Loom Sold

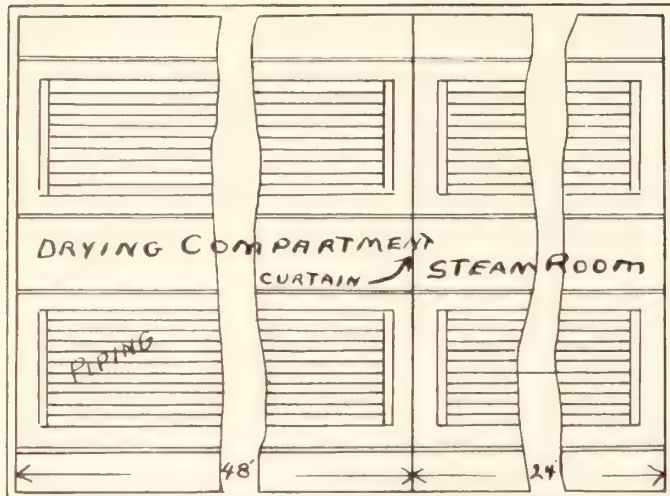
It is reported that the Canadian rights to the Lloyd loom for weaving wicker baby carriages, chairs, etc., has been sold to an American syndicate, headed by J. W. Wells and F. A. Spies, two millionaire lumbermen. The purchase price, while not divulged, is said to run into six figures. It is intimated that a plant would be erected in some Canadian city, preferably Toronto, Montreal or Winnipeg.

How Would You Ventilate This Kiln?

Renfrew, Ont., Oct. 31st, 1919.

Editor "Canadian Woodworker."

Our dry kiln is at present 48 ft. long and we are adding a 24 ft. addition for a steaming chamber. A canvas curtain will separate the steam chamber from the dry kiln proper. The accompanying sketch will



Sketch of dry kiln to be ventilated.

make my meaning clear. There are two sets of tracks and the heating pipes are arranged below. At present we can raise the temperature to 150 degrees, but there is not any circulation in the kiln. This is not right and we want to know how we can ventilate the both compartments so as to secure a good positive circulation. Should you be able to furnish this information we will be very grateful.

Sincerely Yours,

T. Leclair.

We are reproducing the sketch Mr. Leclair enclosed and would ask some of our readers to favor us with what in their opinion is the best location to place the flues and air boxes and how a good circulation may be secured.

Cash for Oak Davenport Frames

The "Canadian Woodworker" is in receipt of a letter from a subscriber stating that they are open at present to place an order amounting to from \$5,000 to \$10,000 for oak and hardwood davenport frames.

Any of our readers who would like to figure on these frames are requested to communicate with the publishers of this journal.

Information on Oil Fume Stain for Oak

A foreman finisher writes in asking if any of our readers can tell him how to mix a fuming stain in oil. Failing that the name of some manufacturer of finishing materials who makes such a stain. He says that the water stains raise the grain of the oak and thinks that an oil stain would largely eliminate this trouble. Come on now, pass the information along.

The hopper feed is a great advantage over the ordinary hand feed. You drop the stuff in the hopper and the machine does the rest.

Filling for Cushions and Pads

Ottawa, Ont., Nov. 10, 1919.

Editor "Canadian Woodworker."

Would you be kind enough to advise me who makes a cheap filling suitable for cushions and pads.

I have written the Griffin Curled Hair people, but find that they do not handle filling other than hair. If you can supply me with this information it would be greatly appreciated.

Yours truly,

F. R. Burgess.

Bauers, Limited, Waterloo, Ont., can no doubt supply you with the material you require. They carry a complete line of upholstery and mattress fillings. The National Mattress Felt & Batting Co., and the Marshall Sanitary Mattress Co., both of Toronto, deal in fillings for cushions and mattresses.

Carved and Beaded Mouldings Required

Erin, Ont., Nov. 5, 1919.

Editor "Canadian Woodworker."

Will you be kind enough to tell me where I can purchase rope and bead mouldings in wood, not composition. This information will be appreciated.

Yours truly,

F. W. Wood.

The Waddell Mfg. Co., Grand Rapids, Mich., make a line of carved and beaded mouldings in wood. Their advertisement appears elsewhere in this issue. Perhaps the wood fibre ornaments manufactured by J. Walter & Sons, Kitchener, Ont., would meet your requirements.

Chair Manufacturers' Profits Low

A bulletin recently distributed to the retail trade by the National Association of Chair Manufacturers contains the following paragraph:

"As an association our efforts are being directed more constantly to the analysis of cost conditions, and it is found to be a fact that those firms having a correct cost system which gives them a monthly profit and loss statement that despite the abnormal volume of business on their books, the profits are not showing a corresponding increase. The thought exists in the minds of a great many retail dealers that manufacturers are not warranted in applying the protective clause to their orders and they fail to realize that as a manufacturer exhausts any item of his material supply and is compelled to replace same in the material markets he is confronted with the same situation, viz., prices are not guaranteed by the suppliers of raw materials."

Appropriate Memento of Cooperage Meet

In connection with the semi-annual meeting of the Associated Cooperage Industries of America, recently held in New Orleans, the E. C. Atkins & Co. Inc., Indianapolis, Ind., brought out a very appropriate memento in the form of a medallion. The clasp had a space for the name of the wearer, while the blue ribbon attached bore the words "Semi Annual Meeting, New Orleans, November 10-11-12, 1919, in gold. The medallion itself was in the shape of a small barrel and carried the name of the Association—The Associated Cooperage Industries of America.

For Economy and Utility

SERVICE to the buyer has never been a meaningless phrase with us. Rather it truly expresses the policy responsible for the consistent growth of this company in its thirty-three years of existence—the policy to learn as we grow and let the buyer share in the benefits coming from what we learn. That is why we now recommend to careful buyers in kitchen cabinet, furniture and similar fields that they—

Use $\frac{4}{4}$
inch

F. A. S. Cottonwood

6 inches to
12 inches

Wide

Our cottonwood is strictly of the yellow variety and is an exceedingly desirable and useful wood. This lumber is dry and is flat and straight—ideally suited to many uses requiring such qualities in a smooth, easy-working wood. At the same time the trend of the hardwood market makes possible a considerable saving right now through the use of cottonwood.

ANDERSON-TULLY CO.

MEMPHIS, TENNESSEE

We cut on Five Mills 70,000,000 Feet a Year of Southern Hardwoods

News of the Trade

The Art Lamp & Shade Co. recently registered in Montreal.

Recent Toronto registrations include the Victoria Cabinet Co.

The Chesley Chair Co., Chesley, Ont., are installing a new Yates endless bed sander.

A. Lafrance, 400 Panet St., Montreal, is remodelling a building on Amity St. for a furniture factory.

A company known as the Brilliant Phonograph Corp., was recently registered in Toronto.

The Dominion Oilcloth & Linoleum Co., Ltd., Montreal, have been granted a Dominion charter.

The Western Box & Shingle Mills, Limited, Nelson, B. C., are building an extension to their sawmill.

J. M. Lefebvre, Brantford, Ont., is erecting a brick building 30 ft. x 38 ft. to be used as a mattress factory.

Comte & Bernice were recently registered at Montreal, as manufacturers of phonographs and musical instruments.

The Verna Phone Company, manufacturers of phonographs and phonograph parts, recently registered in Montreal.

The planing mill conducted by Victor Attridge at Schomberg, Ont., has been sold to Burnel Graham of the same place.

The factory owned by J. W. Dalton, Grimsby, Ont., was destroyed by fire. This plant was used for manufacturing fruit crates.

The partnership known as the Maydwell Mfg. Co., Toronto, manufacturers of mouldings and wood specialties, was recently dissolved.

The Andrew Malcolm Furniture Co., Limited., Kincardine, Ont., are building a two-storey addition, 60 ft. x 80 ft., to their Listowel plant.

The saw and planing mill of A. H. Cummings & Sons, Coaticook, P. Q., was totally destroyed by fire. Loss \$12,000. Owners will rebuild.

The Canadian Woodenware Co., St. Thomas, Ont., are making an addition to their plant and are in the market for some additional equipment.

Peppler Bros. Limited, Hanover, Ont., are planning an addition for the coming Spring that will about double the present output of their plant.

A completely equipped box plant will be installed in connection with the new saw mill being erected at Prince Rupert by R. E. Allen and Olaf Hansen.

La Compagnie Saguenay Limitee, Chicoutimi, P. Q., have been incorporated to manufacture and deal in wood products of all kinds. Capital \$15,000.

A new box factory is being planned by the Alfred McDonald Lumber Co., Peterboro, Ont., as well as extensive additions to their sash and door factory.

The Canada Lumber Co., Ltd., Montreal, P. Q., have been incorporated to manufacture and deal in lumber and wood products of all kinds. Capital \$149,000.

The Canadian Clothespin Company, Weston, Ont., manufacturers of small woodenware, contemplate changing to electric drive and have applied for Hydro power.

A brush and broom factory is being established at McKay Station, B. C., by Mr. Francis. At present he is putting up a small building and installing the necessary equipment.

The planing mill at Harriston, Ont., belonging to the estate of the late George Gray & Co., has been purchased by John McLellan. This is one of the oldest industries in Harriston.

Krug Bros. & Co., Limited, Chesley, Ont., are equipping a veneer room and have purchased the following equipment: Perkins glue spreader and mixer, Perrin press and a veneer taping machine.

The program of the Ontario Housing Commission for 1920, according to a statement recently made by J. A. Ellis, calls for the erection of 4,000 residences under the building scheme.

The St. Martins Shipbuilding Co., Limited, St. Martins, N. B., were recently granted a provincial charter to manufacture tugs, schooners, vessels and boats of all kinds. Capital \$240,000.

The largest building permit issued in Montreal for 1919 was recently granted to the Alaska Bedding Co. This new building will be 280 x 80 and calls for an expenditure of \$200,000.

Canadian Aerial Transportation & Advertising System Ltd., Montreal, P. Q., have been incorporated to manufacture and deal in aeroplanes and other aerial equipment. Capital \$190,000.

McCallum-MacLaren Ltd., Toronto, Ont., are equipping a woodenware plant at Weston. The machinery has all been purchased but they are in the market for a couple of small electric motors.

Mayor Luxton of Mount Forest, Ont., is interested in a firm that contemplates manufacturing phonograph cabinets. It is expected that suitable premises will be leased and fitted up with machinery.

The New Brunswick Shipbuilding Co., Limited, St. John, N. B., were recently granted a provincial charter to manufacture and deal in vessels, schooners, barges and boats of every description. Capital \$320,000.

The Pathe Freres Phonograph Sales Co., Ltd., Toronto, Ont., were recently granted a provincial charter to manufacture and deal in phonographs, talking machines and musical instruments of all kinds. Capital \$40,000.

Carriage Factories Limited, Montreal, P. Q., are planning to engage in the manufacture of automobile bodies. They are admirably equipped for this work and are negotiating for a contract of considerable magnitude.

Royal Roussillon Limitee, Macamic, P. Q., have been incorporated to manufacture and deal in doors, sashes, furniture and coffins, etc. Capital \$20,000. D. Dumont and F. Turcotte of Macamic are two of the incorporators.

The plant, including two vessels under construction, of the Harbor Grace Shipbuilding Co., Harbor Grace, Nfld., was badly damaged by fire. The loss amounts to \$100,000. Repairs will be pushed to completion as quickly as possible.

The planing mill, saw mill and dry kilns of the British Columbia Fir & Cedar Lumber Co., Limited, Vancouver, B. C., were recently destroyed by fire. A considerable quantity of stock fell a prey to the flames. Loss estimated at \$200,000.

Gagnon & Fils & Cie Limitee, St. George, P. Q., have been incorporated to manufacture and deal in furniture, musical instruments and other wood products. Capital \$99,500. Sir Joseph Gagnon, St. George, P. Q., is one of the incorporators.

The Warren Organ Co., Woodstock, Ont., have purchased a plant which, under an agreement with the City Council, is to be enlarged and equipped with modern machinery. The project is to be submitted to the ratepayers at an early date.

A slight blaze occurred in the factory of the Canadian Canoe Co., Peterboro, Ont. As this plant is well protected with fire-buckets and numerous barrels of water, the employees were able to extinguish the blaze before the arrival of the fire brigade.

G. E. Reckin, Wiarton, Ont., is equipping a furniture factory and is in the market for the following machines: double end tenoning machine, band resaw, dovetailing machine, two spindle horizontal boring machine, vertical boring machine, belt sander, saws, etc.

The Standard Toy & Mfg. Co., Toronto, Ont., have purchased a factory at Alliston, and will equip a modern planing mill. All the machines will be electrically-driven. It is expected that the new plant will be ready for operation by the first of the year.

A fire recently occurred in the plant of the Robert Elder Carriage Works, Toronto, Ont. The damage, which amounted to \$2,000, was confined entirely to the basement. The prompt response of the firemen prevented the blaze making any great headway.

The Economical Refrigerator Mfg. Co., Limited, Montreal, P. Q., has been incorporated to manufacture and deal in refrigerators, furniture, and other wood products. Capital \$100,000. O. Readman and L. A. Oceau of Montreal, are two of the incorporators.

It is reported that the Dominion Government plans to place contracts for fifty wooden schooners with British Col-

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umbia shipyards. According to the report, twenty-six of the ships will be constructed at Victoria, and the others will be turned out by yards on the mainland.

Thompson Bros., Limited, Toronto, Ont., have been incorporated to operate planing and saw mills and to manufacture and deal in woodenware and wood products. Capital \$60,000. J. B. Thompson and W. R. Thompson, contractors, Toronto, are two of the incorporators.

The Casualties Reed & Rattan Co., Ltd., Kingston, Ont., have been granted a provincial charter to manufacture and deal in furniture of all kinds, principally articles of reed, rattan and seagrass, capital \$40,000. F. P. Quinn and F. F. Elliott of Kingston, are two of the incorporators.

The Lakefield Canoe & Boat Co., Limited, Lakefield, Ont., have been incorporated to manufacture boats and canoes of all kinds and to carry on a general woodworking business. Capital \$50,000. W. J. Rooney and D. T. Chamberlain, Toronto, are among the incorporators.

The American Box & Novelty Co., Ltd., Montreal, P. Q., have been incorporated to manufacture and deal in cigar boxes, lock corner boxes, toys, woodenware, mill work and wood specialists, capital \$250,000. Philippe Morell and Hector Douen, Montreal, are two of the incorporators.

The Pollock Manufacturing Co., Kitchener, Ont., was recently taken over by the General Phonograph Corporation of New York. The plant is being enlarged and will manufacture tone arms, motors and phonograph accessories in large quantities. A. B. Pollock will act as manager.

The planing mill, hardwood flooring plant and wood-working factory formerly operated by the Tobin Mfg. Co., Bromptonville, P. Q., have been purchased by the Brompton Lumber & Mfg. Co., Limited, Bromptonville, P. Q. The different plants will be operated in all departments.

The Davison Lumber & Manufacturing Co., Limited, Bridgewater, N. S., report that their planing mill, box factory and hardwood flooring plant have been working time and a half for the last few months. Sufficient orders are booked to tax the capacity of these plants for the next three months.

Reitzel Bros., furniture manufacturers of Waterloo, Ont., have purchased the factory of B. E. Bechtel and will use it for a planing mill. Up to the present they have been running a planing mill in conjunction with their furniture factory, and this move will enable them to increase their output of furniture.

A factory to manufacture phonograph cabinets is being established in Mount Dennis, Ont. The arrangements have been completed and the work will be proceeded with immediately. Large orders have been secured and at the start twenty-eight hands will be employed. Mr. Jackson of Toronto is one of the prime movers.

The Brunswick Canadian Products Co., under an agreement with the City Council, Woodstock, Ont., have acquired a small plant now owned by the city and a ten-acre site for a large phonograph factory, which will be erected early next year. This agreement will be submitted to the ratepayers at an early date for their approval.

J. E. L. Streight, of Islington, Ont., has completed a new office and stables and hopes to have his new lumber sheds ready by the new year. It is Mavor Streight's intention to build a new planing mill in the Spring. It will be a

two-storey brick structure of the latest type and equipped with modern labor-saving machinery.

The furniture factory of C. L. March & Co., St. Johns, Newfoundland, was recently damaged by fire. The blaze broke out in the top of the building and the prompt arrival of the fire department prevented it spreading to other floors and assuming serious proportions. It was not extinguished before a considerable amount of damage had been done.

C. Hill of Wiarton, Ont., has closed a deal with the Wiarton Council whereby he and his associates acquire the casket factory, which has long been vacant. The proposal is to turn it into a furniture factory. The agreement calls for a working capital of \$40,000 to be provided, \$12,000 to be spent on machinery within three months, 25 men to be employed the first year, 35 the second and 50 the third and succeeding ten years.

The Parkhill Bedding, Limited, Winnipeg, Man., was recently incorporated with a capital of \$200,000, to manufacture and deal in furniture, beds and house furnishings. J. H. Parkhill, A. B. Jones and R. C. Young, formerly of Alaska Bedding Co., Limited, are associated with the new company. A factory 60 ft x 125 ft. is being erected and it is anticipated that the plant will be in operation in the near future.

A small fire occurred in the plant of the Andrew Malcolm Furniture Co., Limited, Listowel, Ont. The fire, which occurred early in the morning, started in a spraying cabinet in the finishing room. This factory is equipped with a sprinkler system, and it was only a few seconds before the sprinklers were working, completely extinguishing the blaze. Most of the damage done was caused by water.

Seaman, Kent Co., Limited, of Toronto, have purchased the large factory formerly owned by the West Lorne Wagon Works at West Lorne, Ont., and will convert the building into a plant for turning out oak flooring exclusively. This will make five plants, the output of which is controlled by Seaman, Kent Co. They are very busy at all their factories and have been doing considerable export trade, although owing to the scarcity of hardwoods, they have turned down a number of orders from the Old Country.

Personal Items

The death of S. L. Doolittle recently occurred in St. Mary's, Ont. Mr. Doolittle was president of the St. Mary's Wood Specialty Co., Limited, and one of St. Mary's most respected citizens.

J. A. Alain, managing-director of the Victoriaville Furniture Co. Ltd., Victoriaville, P. Q., has been appointed a member of the committee of the Quebec Division of the Canadian Manufacturers Association.

George Clark, an employee of the Beach Furniture Co., Cornwall, Ont., was recently made the recipient of a handsome leather rocking chair and flower stand on the occasion of his approaching marriage.

Walter Scott of Toronto recently passed away. He was one of the older furniture manufacturers coming to Canada in 1886. He spent some years at Seaforth, Ont., and later at Wingham, Ont. Coming to Toronto about 1890, he took charge of the woodworking department in the Central Prison. He is survived by three sons and two daughters.

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Quartered and Plain
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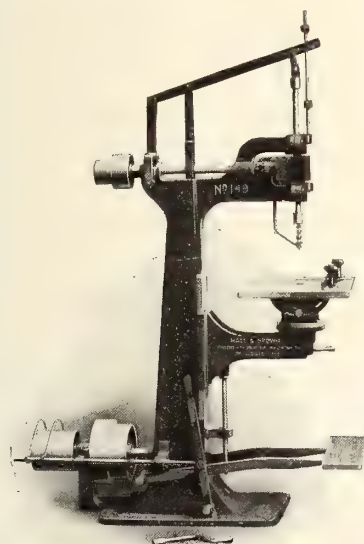


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The No. 149 Vertical Boring Machine is designed for high-quality work where absolute accuracy is essential, and rapidity, ease and convenience of operation are important factors.



The counter is arranged for two changes of feed, the spindle being driven by machine-cut bevel gears and the gears by a straight line belt. Bores from 1 inch to 9 inches deep and up to the center of 36-inch material. 20 x 30 inch table.

Write for interesting circular telling the full story of the No. 149—it may help you save money.

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Home Office and Factory, 1913 to 1933 N. Broadway
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40M ft. 1" No. 3 Com. and Btr. Hard Maple.
38M ft. 2" No. 2 " " " " "
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63M ft. 1" No. 3 " " " Beech
25M ft. 2" No. 2 " " " "
11M ft. 1" No. 3 " " " Soft Elm
2M ft. 6/4" No. 2 Com. and Btr. Soft Elm.
8M ft. 3" & 3 1/2" Com. and Btr. Soft Elm.
9M ft. 1", 2" and 3" No. 3 Com. and Btr. Oak,
largely 1" and 2".
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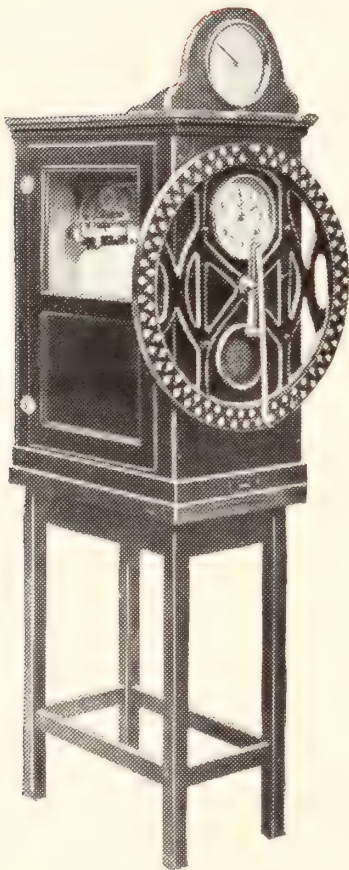
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You wouldn't sign your check with a lead pencil

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Northern and Southern Hardwoods White Pine, Spruce and Hemlock

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FAIR TREATMENT — that you can depend on getting.

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The following books are offered at special prices subject to previous sale:

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Common-Sense Handrailing, by Fred T. Hodgson. Published by Frederick J. Drake & Company, Chicago. 114 pages, illustrated. Price 50c.

"Boy Activity Projects," by Samuel A. Blackburn, published by the Manual Arts Press, Peoria, Ill. 144 pages, including 64 illustration plates. Price \$1.25.

Handrailing Simplified, by An Experienced Architect. Published by William T. Comstock, New York. 52 pages, illustrated. Price 50c.

"Woodwork Joints," by Evans Bros., London England; 214 pages, with 430 illustrations and a complete index of eleven hundred references. Price \$1.25.

"Carpentry," by Ira S. Griffith. Published in 1916 by The Manual Arts Press. 188 pages, illustrated. Price \$1.00.

"Details of Cabinet Construction," by Evans Bros., London, England; 203 pages, fully illustrated. Price \$1.25.

Utilization of Wood-Waste (Second Revised Edition), by Ernst Hubbard. Published in 1915 by Scott, Greenwood & Sons, 192 pages, illustrated. Price \$2.00.

Seasoning of Wood; A Treatise of the Natural and Artificial Processes Employed in the Preparation of Lumber for Manufacture, with Detailed Explanations of its Uses, Characteristics and Properties, by Joseph Wagner. Published by D. Van Nostrand Co., in 1917. 274 pages, illustrated. Price \$3.00.

"The Kiln Drying of Lumber," a Practical and Theoretical Treatise, by Harry Donald Tiemann, M.E., M.F. Just published, by I. B. Lippincott Co. 316 pages, illustrated. Price \$4.50.

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Generator, 110 volts, K.W.
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All these machines are in good condition and the prices are right. Apply:

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60" Fay & Egan, band re-saw.
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Fay, horizontal, boring machine.
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Fay & Egan 12 spindle dovetailer.
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M. 120 Cowan, panel raiser.
30" Whitney, wood scraper.
20" American, wood scraper.
6" British-American, hand floor scraper.
Dundas, wood frame tenon machine.
Fay, iron frame, double head, tenon machine.
Cowan, veneer press, screw.
No. 2 Reynolds, power screw driver.
Waterous lath machine.
26" Dominion lath trimmer.
6" Linderman, automatic, glue jointer.
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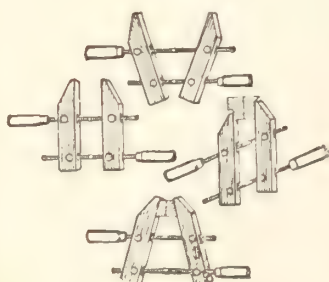
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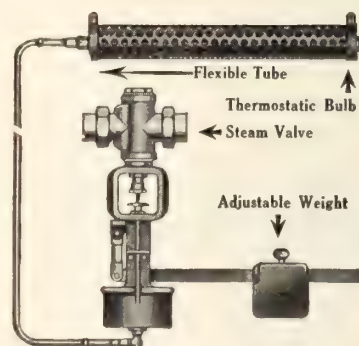
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Timms-Phillips Company, Vancouver, B.C.

BELTING

Goodyear Tire & Rubber Co., Toronto, Ont.

BENCH PLANER

Wallace, J. D. & Company, Chicago, Ill.

BENCH SAW

Wallace, J. D. & Company, Chicago, Ill.

BENDING MACHINES

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Perfection Wood Steaming Retort Company, Parkersburg, W. Va.
Williams Machinery Co., A. R., Toronto, Ont.

BLOWERS

Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

BLOW PIPING

Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

BOILER COMPOUND

Beveridge Paper Company, Montreal, Que.

BORING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Reynolds Machine Co., Massillon, Ohio.
Virginia Hole Sawing Co., Roanoke, Va.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

BOX BANDS

Laidlaw Bale-Tie Co., Hamilton, Ont.

BOX MAKERS' MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Neilson & Company, J. L., Winnipeg, Man.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CABINET PLANERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CARVING MACHINES

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.

CASTERS

Faultless Caster Co., Evansville, Ind.
Foster, Merriam Co., Meriden, Conn.

CIRCULAR SAWS

Wallace & Co., J. D., Chicago, Ill.

CLAMPS

Adjustable Clamp Co., Chicago, Ill.
Batavia Clamp Company, Batavia, N.Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

COOPERS' MACHINERY

Holmes Machinery Co., E. & B., Buffalo, N.Y.

CRATING LUMBER

Smith, Ltd., Fred T., Montreal, Que.

CUT-OFF SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Holmes Machinery Co., E. & B., Buffalo, N.Y.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

CUTTER HEADS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Fischer Mfg. Co., Williamsport, Pa.
Garlock-Walker Machinery Co., Toronto, Ont.
Hawker Mfg. Co., W. S., Dayton, Ohio.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Shimer Cutter Head Co., Galt, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

CYLINDER HEADS

Cowan & Company, Galt, Ont.

DIMENSION STOCK

Newman Sons, John P., Warton, Ont.

DOOR CARRIERS FOR DRY KILNS

Dry Kiln Door Carrier Co., Indianapolis, Ind.

DOVETAILING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

DOWEL MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Hawker Mfg. Co., W. S., Dayton, Ohio.
Williams Machinery Co., A. R., Toronto, Ont.

DOWELS

Canada Wood Specialty Co., Ltd., Orillia, Ont.
Eaton & Sons, J. R. Orillia, Ont.

DRY KILNS

Canadian Blower & Forge Co., Kitchener, Ont.
Grand Rapids Veneer Works, Grand Rapids, Mich.
National Dry Kiln Co., Indianapolis, Ind.

DUST COLLECTORS

Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

DUST SEPARATORS

Canadian Blower & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

EDGERS (Single Saw)

American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

EDGERS (Gang)

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

END MATCHING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

EXHAUST FANS

Canadian Blower & Forge Co., Kitchener, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Toronto Blower Company, Toronto, Ont.

EXHAUST SYSTEMS

Toronto Blower Company, Toronto.

FIBRE CORD

Grand Rapids Fibre Cord Co., Grand Rapids.

FLOORING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

FLUTING HEADS

Fay & Egan Co., J. A., Cincinnati, Ohio.

FURNITURE DESIGNERS

Otto A. Jiranek, Grand Rapids, Mich.

FURNITURE LEATHER

Eagle-Ottawa Leather Co., Grand Haven, Mich.

FURNITURE TRIMMINGS

Faultless Caster Co., Evansville, Ind.
Foster, Merriam Co., Meriden, Conn.

GARNET PAPER AND CLOTH

Carborundum Co., Niagara Falls, N.Y.

GRAINING MACHINES

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDING WHEELS

Carborundum Co., Niagara Falls, N.Y.

GLUE

Bloede Company, Victor G., Baltimore, Md.
Casein Mfg. Company, New York, N.Y.
Kane Manufacturing Co., Chicago, Ill.
Perkins Glue Company, South Bend, Ind.

GLUE CLAMPS

Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener.

GLUE HEATERS

Fay & Egan Co., J. A., Cincinnati, Ohio.
International Electric Co., Indianapolis, Ind.
Jackson, Cochrane & Company, Kitchener.
Pringle, R. E. T., Toronto, Ont.

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Dry Birch Stock

We offer in **Birch and Maple**
End Stock 1 x 7 in., and wider, 1 x 6 in.

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and **BROWN ASH**

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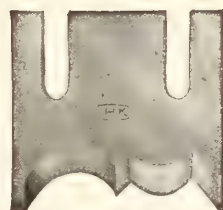
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PLANER KNIVES
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OF ALL DESCRIPTION

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Hardwoods

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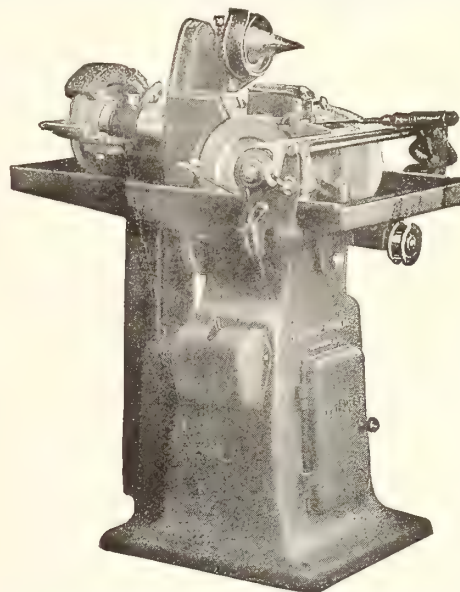
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THE MODERN EDGE TOOL SHARPENING MACHINE
THE STANDARD FOR ALL WOOD-WORKING SHOPS



No. 481 MOTOR OR COUNTERSHAFT DRIVE
An automatic attachment for grinding long knives
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3. Grinding Cone. 4. Leather Wheel. 5. Emery Wheel.

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"Canadian Woodworker" Buyers' Directory—Continued

GLUE JOINTERS

Canada Machinery Corporation, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GLUE SPREADERS

Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane, & Company, Kitchener.

GLUE ROOM EQUIPMENT

Perrin & Company, W. R., Toronto, Ont.

GRINDERS (Cutter)

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Williams Machinery Co., A. R. Toronto, Ont.

GRINDERS (Knife)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

GRINDERS (Tool)

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Jackson, Cochrane, & Company, Kitchener, Ont.

GRINDING WHEELS

Carborundum Co., Niagara Falls, N.Y.

GROOVING HEADS

Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.

GUM LUMBER

Aberdeen Lumber Co., Pittsburg, Pa.
American Hardwood Lumber Co., St. Louis,
Mo.
Anderson-Tully Co., Memphis, Tenn.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Brown & Co., George C., Memphis, Tenn.
Churchill-Milton Lumber Co., Louisville, Ky.
Cornelius Lumber Co., St. Louis, Mo.
Gum Lumber Association, Memphis, Tenn.
Holly Ridge Lumber Co., Louisville, Ky.
Hyde Lumber Company, South Bend, Ind.
Nickey Bros, Memphis, Tenn.
Paepcke-Leicht Lumber Co., Chicago, Ill.
Probst Lumber Co., Cincinnati, Ohio.
Sondheimer Co., E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Thomas & Proetz Lumber Co., St. Louis, Mo.
Wilcox & Co., I. B., Louisville, Ky.

HAND SCREWS

Fay & Egan Co., J. A., Cincinnati, Ohio.

HANDLE & SPOKE MACHINERY

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Whitney & Son, Baxter D., Winchendon, Mass.

HARDWARE

Laidlaw Bale-Tie Co., Hamilton, Ont.

HARDWOOD LUMBER

Aberdeen Lumber Co., Pittsburgh, Pa.
American Hardwood Lumber Co., St. Louis,
Mo.
American Oak Mfrs.' Assn., Memphis, Tenn.
American Walnut Association, Washington,
D.C.
Anderson-Tully Co., Memphis, Tenn.
Astoria Mahogany Co., New York, N.Y.
Atlantic Lumber Company, Toronto, Ont.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Boland Lumber Co., Grand Rapids, Mich.
Bonner & Sons, J. H., Memphis, Tenn.
Brown & Company, Geo. C.
Burns & Knapp Lumber Co., Conneautville,
Pa.
Bury & Company, Robert, Toronto, Ont.
Buskirk Rutledge Lumber Co., Cincinnati, O.
Cornelius Lumber Co., St. Louis, Mo.
Canadian General Lumber Co., Toronto, Ont.
Churchill-Milton Lumber Co., Louisville, Ky.
Darby Hardwood Lumber Co., Memphis, Tenn.
Des Moines Sawmill Co., Des Moines, Iowa.
Dooley Lumber Co., F. T., Memphis, Tenn.
Eakin Lumber Co., Weston, W.Va.
Evansville Band Mill Co., Evansville, Ind.
Felger Lumber & Timber Co., Memphis, Tenn.
Gayoso Lumber Co., Memphis, Tenn.
Hart & McDonagh, Toronto, Ont.
Heaney, Percy E., Kitchener, Ont.
Holly Ridge Lumber Co., Louisville, Ky.
Hunt, Wellington & Smith, Nashville, Tenn.
Hyde Lumber Co., South Bend, Ind.
Kersley, Geo., Montreal, Que.
Korn-Conkling Co., Cincinnati, Ohio.

Kosse, Shoe & Schleyer Co., Cincinnati, O.
Kraetzer-Cured Lumber Co., Greenwood, Miss.
Lawrence & Co., P. J., St. Louis, Mo.
Long-Knight Mfg. Co., Indianapolis, Ind.
McLennan Lumber Co., Montreal, Que.
Memphis Band Mill Co., Memphis, Tenn.
Mowbray & Robinson, Cincinnati, Ohio.
Osgood Lumber Company, Osgood, Ind.
Paepcke Leicht Lumber Co., Chicago, Ill.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City.
Pickrel Walnut Co., St. Louis, Mo.
Probst Lumber Co., Cincinnati, Ohio.
Reese Sherriff Lumber Co., Williamsport, Pa.
Shafer Hardwood Co., John I., South Bend,
Ind.
Sondheimer Co., E., Memphis, Tenn.
Spencer, C. A., Montreal, Que.
Stark & Co., Jas. E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Stimson & Co., J. V., Owensboro, N.Y.
Sullivan, Frank, Buffalo, N.Y.
Thompson, Katz Lumber Co., Memphis, Tenn.
Wayne Lumber Co., New York, N.Y.
Williams Lumber Co., Fayetteville, Tenn.

HYDRAULIC VENEER PRESSES

Perrin & Company, Wm. R., Toronto, Ont.

JOINTERS

American Woodworking Machinery Company,
Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

LATHES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.

Trevor Mfg. Co., Lockport, N.Y.

Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.

LEATHER

Fibro Mfg. Company, New York, N.Y.

MACHINE KNIVES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Galt Knife Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
White Co., L. & I. J., Buffalo, N.Y.
Yates Machine Co., P. B., Hamilton, Ont.

METALINE NAILS

Canada Tack & Nail Co., Hamilton, Ont.
Dominion Tack & Nail Co., Galt, Ont.

MITRE SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

MOTOR TRUCK EXTENSIONS

Swedish Crucible Steel Co., Windsor, Ont.

MOULDERS

Hall & Brown Woodworking Machine Co., St.
Louis, Mo.

MULTIPLE BORING MACHINES

Root Company, B. M., York, Pa.

MULTIPLE BOXING MACHINES

Fay & Egan Co., J. A., Cincinnati, Ohio.
Nash, J. M., Milwaukee, Wis.

OIL STONE GRINDERS

Mummet-Dixon Co., Hanover, Pa.

PANELS

Waetjii & Co., L., Milwaukee, Wis.

PATTERN SHOP MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company
Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PERIOD MOULDINGS

Waddell Mfg. Co., Grand Rapids, Mich.

PERIOD TURNINGS

Walter & Sons, J., Kitchener, Ont.

PLANER KNIVES, (and others)

Galt Knife Co., Galt, Ont.
White Co., L. & I. J., Buffalo, N.Y.

PLANERS

American Woodworking Machinery Company,
Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St.
Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLANING MILL MACHINERY

American Woodworking Machinery Company,
Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PORTABLE DRILLS

Wisconsin Electric Co., Wisconsin, U.S.A.

PRESSES (Veneer)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Co., Wm. R., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.

RESAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company,
Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RIM AND FELLOE MACHINERY

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.

RIP SAWING MACHINES

American Woodworking Machinery Company,
Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co.,
St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company,
Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

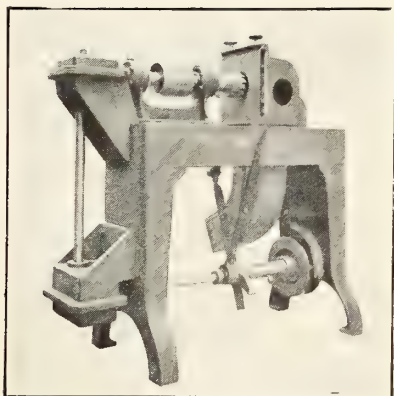
RUBBING MACHINES

DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.
Paasche Air Brush Co., Chicago, Ill.

SAFETY DEVICES

Cowan & Company, Galt, Ont.

AUTOMATIC MACHINE FOR CUTTING HOLES



Patents Pending

This machine will cut holes or half holes in long or short boards, smooth and true in size. Will also cut wheels and automatically bore holes in the center at same operation. It works automatically on short blocks, feeding up to the head and pushing them out after they are cut. Has a capacity of 18 wheels or holes per minute. Will make bevel or square edge wheels. When writing give diameter, thickness and kind of wood to be used. Machines are made to suit the work. It has an attachment to cut hand-holds in crate ends, or a Special Machine is made for that purpose. When writing give street number.

Machine is substantially built of iron and steel, ball bearing equipped and worm gears running in grease.

Full detailed description and price on request.

The Virginia Hole Sawing Co.

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should you rely on human vigilance?**



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National Humidity Controlled DRY KILNS

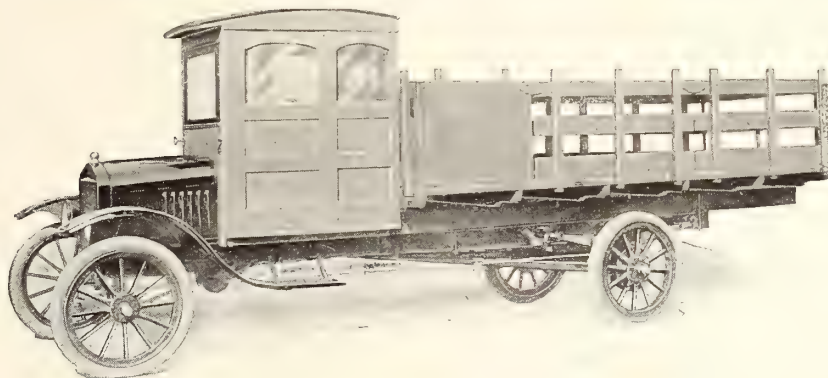
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Batts Limited, Toronto.
Irvin Lumber Company, Toronto.

Langmuir Manufacturing Company, Toronto.
Gardiner Lumber Company, Galt, Ont.
Gibbard Furniture Company, Napanee, Ont.

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164 St. James Street, MONTREAL

"Canadian Woodworker" Buyers' Directory—Continued

SANDERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Solem Engineering Co., Sheboygan, Wis.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SASH, DOOR & BLIND MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAWS

Atkins & Co., E. C., Indianapolis, Ind.
Radcliff Saw Mfg. Company, Toronto, Ont.
Shurly Co., T. F., St. Catharines, Ont.
Shurly-Dietrich, Ltd., Galt, Ont.
Silver Mfg. Company, Salem, Ohio.
Simonds Canada Saw Co., Montreal, Que.
Wallace & Co., J. D., Chicago, Ill.

SAW BENCH

Sidney Machine Tool Co., Sidney, O.

SAW FITTING TOOLS

Crowell, D. J., Buffalo, N. Y.

SAW SWAGES

Cowan & Company, Galt, Ont.
Crowell, J. D., Buffalo, N.Y.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.

SAW TABLES

Canada Machinery Corporation, Galt, Ont. ..
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Holmes Machinery Co., E. & B., Buffalo, N.Y.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Company, Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

SCRAPING MACHINES

Canada Machinery Corporation, Galt, Ont. ..
Garlock-Walker Machinery Co., Toronto, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.

SCREW DRIVING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Reynolds Machine Co., Massillon Ohio.

SCREW HOLES

Stine Screw Holes Co., Waterbury, Conn.

SCROLL SAWS

Canada Machinery Corporation, Galt, Ont. ..
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Radcliffe Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SECOND-HAND MACHINERY

Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

SHAPERS

American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS

Canadian Bolwer & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

SPRING MATTRESS FRAMES

Newman Sons, J. P., Wiarion, Ont.

STAINS

Ault & Wiborg, Toronto, Ont.
Marietta Paint & Color Co., Marietta, Ohio.

SINGLE SPINDLE BOXING MACHINES

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.

STAVE SAWING MACHINE

Whitney & Son, Baxter D., Winchendon, Mass.

SURFACERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Silver Mfg. Co., Salem, Ohio.
Tannewitz Works, Grand Rapids, Mich.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES

Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES

Walter & Company, B., Wabash, Ind.

TEMPERATURE REGULATORS

Canadian Powers Regulator Co., Toronto, Ont.

TENONING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TIME CLOCKS

International Business Machines Co., Toronto, Ont.

TRIMMERS

American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRUCKS

National Dry Kiln Co., Indianapolis, Ind.

TWINES & WEBBING

Daly & Morin, Limited, Montreal.
Doon Twines, Ltd., Kitchener, Ont.

UPHOLSTERERS' SPRINGS

Daly & Morin, Ltd., Montreal.

UPHOLSTERERS' TACKS & NAILS

Canada Tack & Nail Co., Hamilton, Ont.
Dominion Tack & Nail Co., Galt, Ont.
Daly & Morin, Ltd., Montreal.

VARNISHES

Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg Company, Toronto, Ont.
Penfound Varnish Co., Toronto, Ont.

VARNISH SPRAYERS

DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

VENEERS

Astoria Mahogany Co., New York, N.Y.
Batesville Lumber & Veneer Co., Lawrenceburg, Ind.
Birds Eye Veneer Co., Escanaba, Mich.
Bury & Compny, Robert, Toronto, Ont.
Central Lumber Co., Indianapolis, Ind.
Christmann Veneer & Lumber Co., St. Louis, Mo.
Dean Spicker Company, Chicago, Ill.
Empire Veneer Company, Chicago, Ill.
Evansville Veneer Co., Evansville, Ind.
Freiberg Lumber Co., Cincinnati, Ohio
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Geo. Kersley, Montreal, Que.
Korn-Conkling Co., Memphis, Tenn.
Long-Knight Lumber Co., Indianapolis, Ind.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Nartzik, J. J., Chicago, Ill.
National Veneer & Lumber Co., Indianapolis, Ind.
North Vernon Lumber Co., North Vernon, Ind.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Roberts & Co., John N., New Albany, Ind.
Southern Veneer Mfg. Co., Louisville, Ky.
Thompson Veneer Co., W. T., Edinburgh, Ind.
Toronto Veneer Company, Toronto, Ont.
Underwood Veneer Co., Wausau, Wis.
Veneer Manufacturers Co., Chicago, Ill.
Waetjen & Co., George L., Milwaukee, Wis.

VENEER TAPE

Ideal Coated Paper Co., Brookfield, Mass.

VENTILATING APPARATUS

Canadian Blower & Forge Co., Kitchener, Ont.

VENEER JOINTERS

Garlock-Walker Machinery Co., Toronto, Ont.

VENEER MACHINERY

Garlock-Walker Machinery Co., Toronto, Ont.

VENEER PRESSES (Hand and Power)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Company, Wm. R., Toronto, Ont.

VICES

Fay & Egan Co., J. A., Cincinnati, Ohio.

WOOD FINISHES

Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg, Toronto, Ont.
Penfound Varnish Co., Toronto, Ont.

WALNUT LUMBER

American Walnut Association, Washington, D. C.
Des Moines Saw Mill Co., Des Moines, Iowa.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Walnut Company, St. Louis.

WOOD SCREWS

Robertson Mfg. Co., P. L., Milton, Ont.

WOOD TURPENTINE

Brown Corporation, Quebec, Que.

WOOD TURNING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Garlock-Walker Machinery Co., Toronto, Ont.
Mattison Machine Works, Rockford, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES

Fay & Egan Co., J. A., Cincinnati, Ohio.

THE SLIDE IS THE HEART OF YOUR EXTENSION TABLE



*If the Slide Does Not Work Properly
Your Whole Table is Condemned*

**Wabash Slides insure
Satisfied Customers**

SLIDE MAKING is a SPECIALTY BUSINESS

We can Furnish Better Slides for Less Cost

Eliminate Slide Troubles by using
WABASH SLIDES

MADE BY

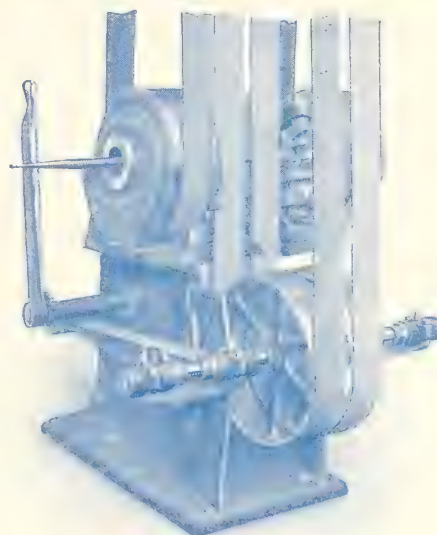
B. Walter & Company

Edsall St., Wabash, Ind.

Canadian Representative:

A. B. CAYA, 28 King St. East, Kitchener, Ont.

It's Mighty Expensive



Sanding your long handles by hand.
The **Nash Sander** can do it much
better and at a big saving in cost.

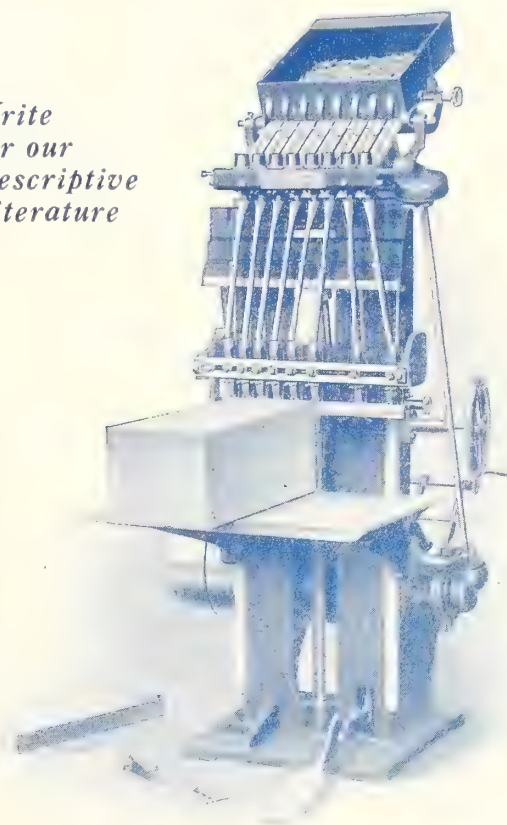
Why waste your dollars in hand work?

J. M. NASH, Milwaukee, Wis.

How do YOU Drive Nails?

The Morgan Automatic Nailing Machine will prove a good investment for any woodworking plant. It drives nails anywhere and in any kind of wood, accurately, effectively and faster than it is possible to do it by hand. It makes money for Box Factories, Canning Factories, Cabinet Factories, Furniture Factories, etc.

*Write
for our
Descriptive
Literature*



Morgan Machine Co.

DEPT. A

ROCHESTER, N.Y.

No. 8 Plain Nailing Machine



*- hand -
Sanding
at
Machine
Speed*

Conserving Labor

with Our

“138” Standard Hand Block Belt Sander

AND besides eliminating practically all hand work on flat and curved surfaces, the “138” will finish to better advantage much work that is done in a way on other sanders.

Even a small boy can operate it successfully and do the work of 4 to 8 men sanding by hand.

Why not send a postal for our new “138” circular describing clearly how the saving in labor pays for this sander in a few weeks?

THIS machine, combining as it does, mile-a-minute sand belt travel with the principle of hand-sanding, makes the most practical all-round type of sander for the average shop. In a factory where high-paid cabinet makers waste at least a third of their time sanding and scraping by hand, this “138,” operated by ordinary workmen, will eliminate 90% of that waste.

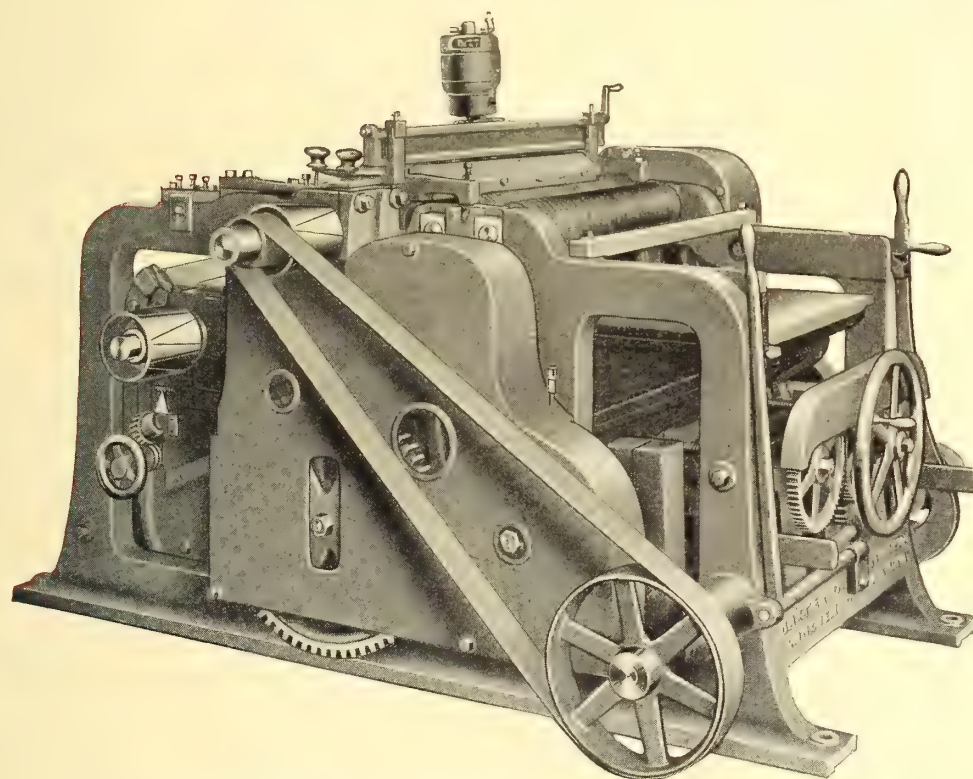
Mattison Machine Works
Rockford, Illinois, U. S. A.

CANADIAN WOODWORKER

and
Furniture Manufacturer

THE WHITNEY No. 24 DOUBLE PLANER

planes any kind of wood on both sides at the same operation and produces a large quantity of smooth and accurate work in the least time



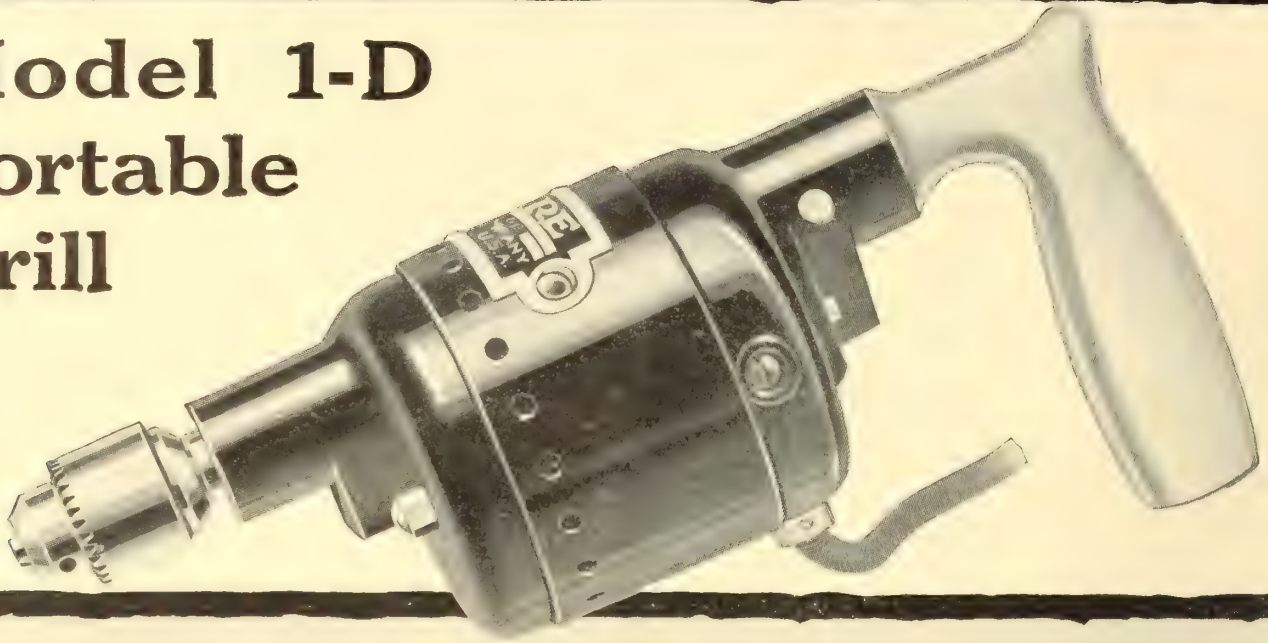
Special Features

- A Rigid Frame.
- Bed raised and lowered on inclines.
- Power hoist for bed.
- Hardened Tables opposite cutter heads.
- Automatic Chipbreaker.
- Eight gear-driven feed rolls.
- Two sectional infeed rolls.
- Positive and powerful feed.
- Clamp cutter head boxes.
- Cutter heads with long bearings and large diameters.
- Cutter heads belted at both ends.
- Machine cut gears.
- Lower head easily and quickly removed.

These machines can be furnished with two or four-knife Square Cutter Heads or four-knife Round Cutter Heads, Flexible or Sectional Chipbreaker and Motor-Driven Grinders and Devices.

Baxter D. Whitney & Son, Inc.
Winchendon, Mass. Can. Selling Representative—H. W. Petrie, Ltd., Toronto, Ont.

Model 1-D Portable Drill



HANDY—ECONOMICAL—EFFICIENT

Specifications:

Length—10 inches.

Weight—4 $\frac{3}{4}$ pounds.

Capacity—Steel, 0 to $\frac{3}{16}$ " Wood and alloys, 0 to $\frac{1}{2}$ ".

Motor—Universal, on either direct or alternating current.

Diameter of Motor—3 $\frac{1}{8}$ inches.

Spindle—Offset from center $\frac{1}{16}$ ".

Helical Gears.

Aluminum Handle.

Complete with 10-ft. cord, plug, switch and chuck.

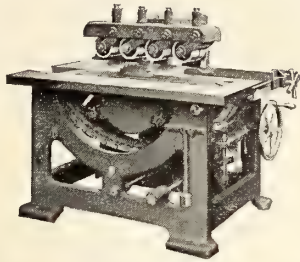
Jacob's Chucks used as a regular equipment.

FOR speed in drilling and counter-sinking small holes, this tool is just what you need. It can be used on any kind of material—steel, iron, brass, aluminum or wood—and gives lasting service.

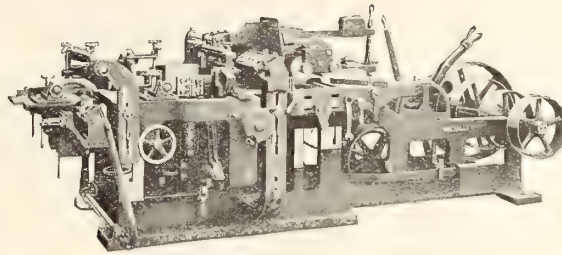
If your dealer cannot supply you with the Model 1-D, tell us about your requirements.

Wisconsin Electric Company
7118 Sixteenth Street, Racine, Wisconsin, U. S. A.

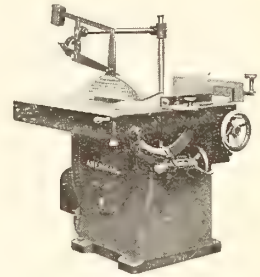
DUMORE GEARED ELECTRIC DRILLS



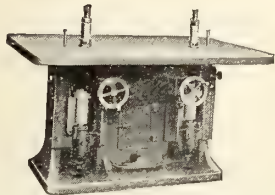
No. 25 Edging Saw



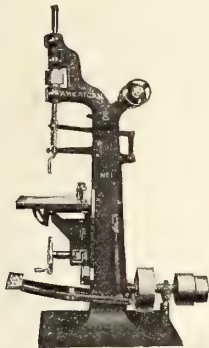
No. 505 Fast Feed Moulder



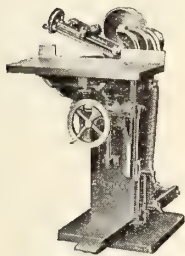
No. 20 Universal Saw



No. 30 Double Spindle Shaper



No. 2 Vertical Borer



Radial Borer

**American Wood
Working Machines
are sold by**

**Garlock-Walker
Machinery Co.**

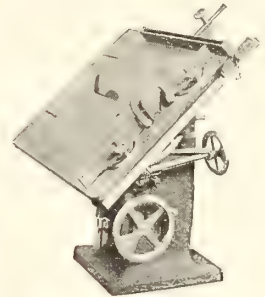
INC.

**32 Front Street West
TORONTO, Canada**

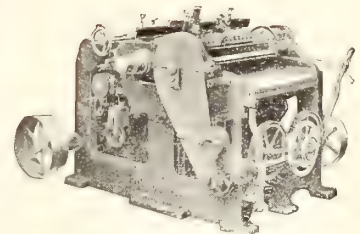
You can depend on Mr. Garlock for correct information concerning any of our machines. You can depend on him too for reliable advice concerning any of your woodworking problems. He is a practical man. He can save you money.

**American Woodworking
Machinery Co.**

London Agents—
The Projectile Company.



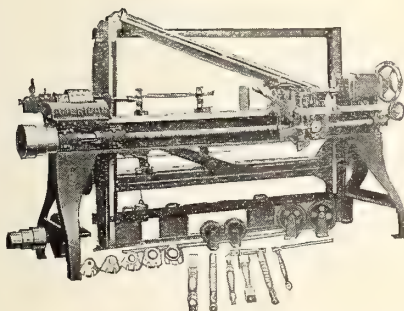
No. 1 Variety Saw



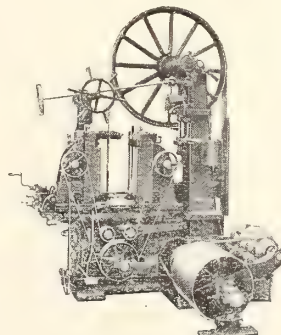
No. 444 Single Surfacer



Double Cut-off Saw



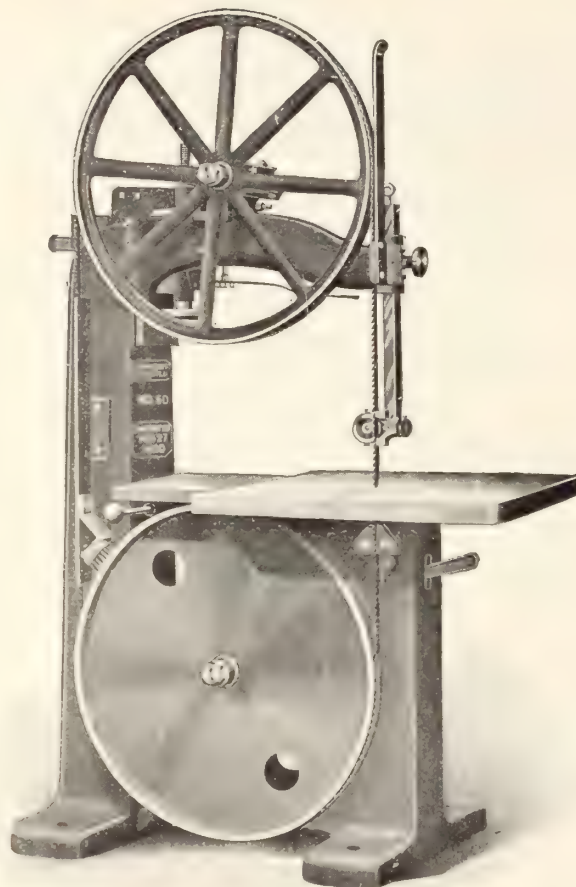
Back Knife Lathe



No. 109 Band Saw



No. 1 Jointer and Buzz Planer



Save 25% to 50% of Blade Upkeep and Power Cost Get Two, Even Three Times As Much Work

It's not the blades that wear out that cost, it's those that break.

It's the broken blades that cut down productive time and cost to repair and to replace.

Blade breakage is reduced to a minimum on Fay-Egan No. 50—36" Square Column "Lightning Line" Band Scroll Saws.

The Fay-Egan "Knife Edge" Blade Tension, made on the principle of a fine laboratory balance scale, is so sensitive that it compensates for changes in atmospheric conditions—yet, so flexible, you can pass a block between blade and wheel, while running, without breaking the blade. Folks tell us blade expense on "No. 50" averages 50 to 75 per cent. less than on the old timers.

The solid lower wheel acts like the fly wheel on your engine, its momentum carrying the load, so that the power consumption is reduced fully one-half, while at the same time it controls the light-spoked upper one, preventing over-running and choking down on a heavy cut.

The heavy square column eliminates vibration and permits the wheels to be revolved at 50 to 100 per cent higher speed, increasing the cutting capacity to double, and in some cases, triple that of the ordinary band saw.

As a user of saws, you cannot afford to ignore what Fay-Egan Square Column Band Saws are doing for others and can do for you. An investigation does not obligate you.

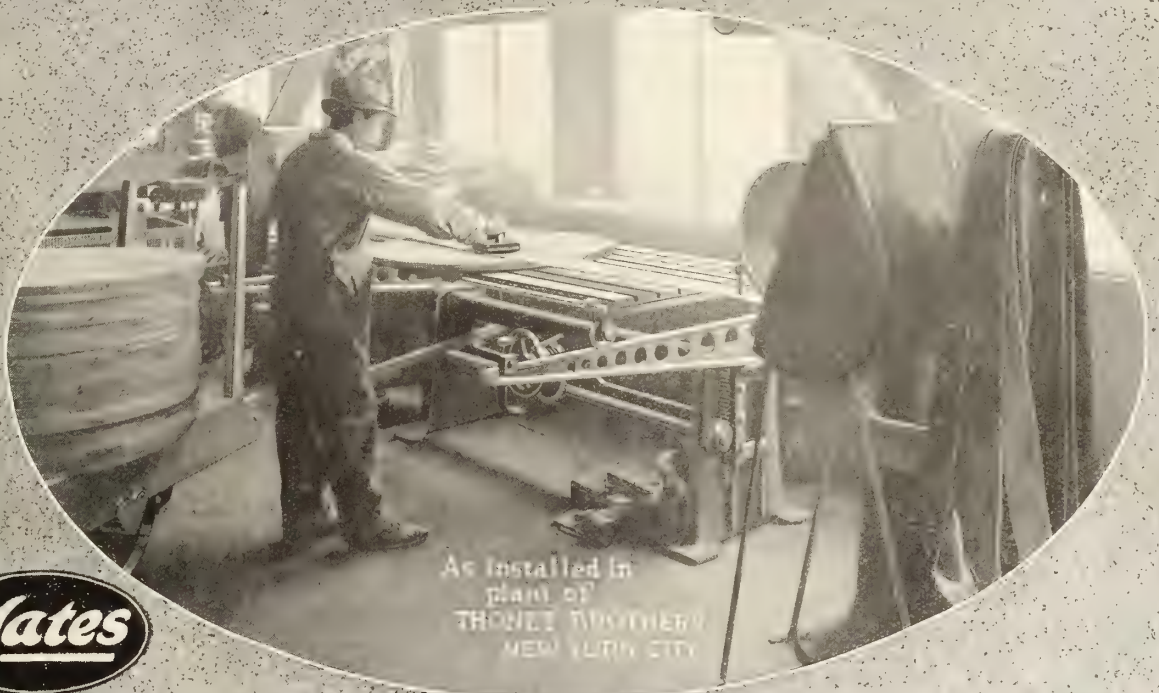
Write for Bulletin M-4

J. A. FAY & EGAN CO.

153-163 W. Front St.

CINCINNATI, O.

A BETTER BELT SANDER



As installed in
plant of
THONET BROTHERS
NEW YORK CITY

Yates

NUMBER FOUR TWENTY SEVEN

Yates

All belt sanders look more or less alike, and it is only through a knowledge of construction details that the best may be selected.

The Yates No. 427 Belt-Sander is "Better built." It contains the necessary details to make it a better belt sander.

The idler pulleys are of fibre, with bronze bearings—eliminating trouble due to high speed. The working table is large, and is so constructed that all adjustments may be easily and accurately made. The Pedestals are of extra heavy construction, eliminating vibration.

If you are interested in a better belt sander, write for further information

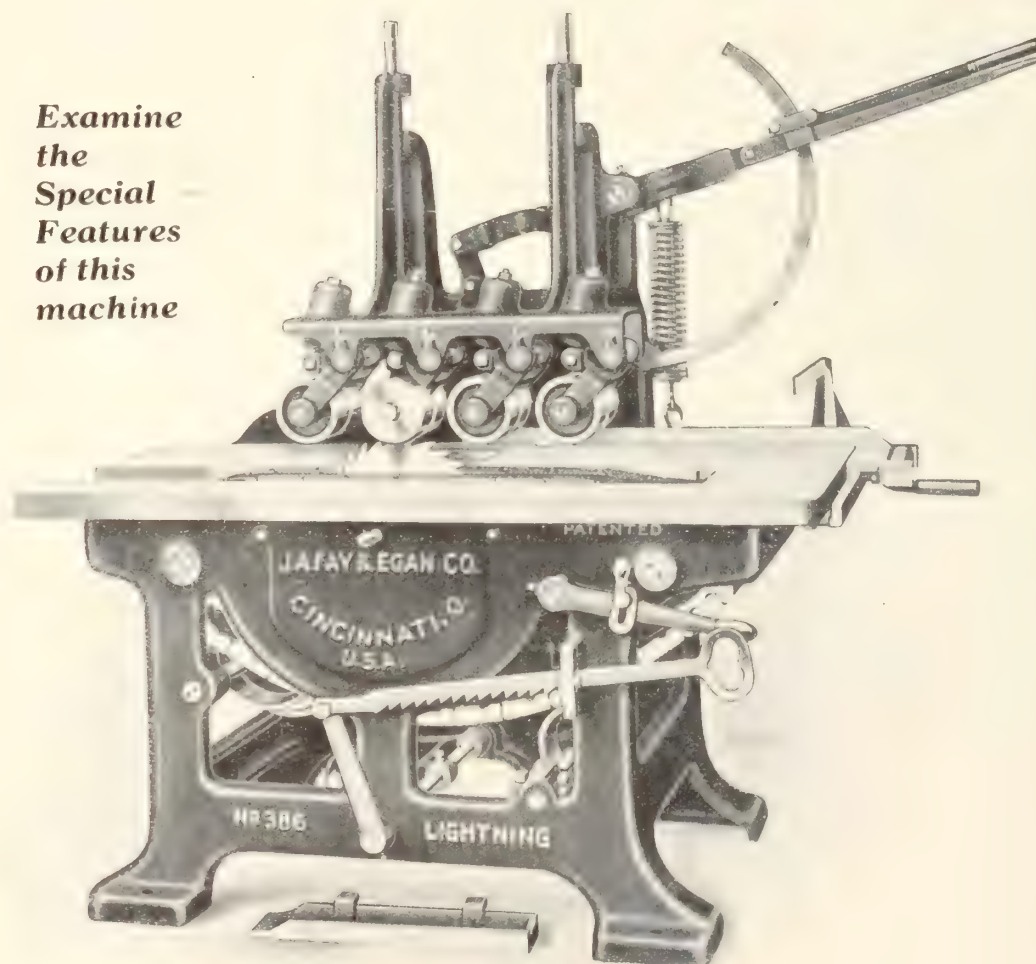
P. B. Yates Machine Company Ltd.

HAMILTON, ONT. CANADA
United States Plant, Beloit, Wisconsin

New Straight Edge Ripping and Jointing Machine

Makes perfect straight joint ready for glueing
Built in two sizes

*Examine
the
Special
Features
of this
machine*



Prevents any twisting on either long or short stock.

Saw arbor easily accessible for oiling.

Double feed chain of flat milled links, each link removable and interchangeable.

Instantaneous adjustment of all rolls easily made and automatically locked at any point.

Spring counterbalance makes roll adjustment easy.

Saw blade easily accessible by removing plate.

Chain adjustable above table for rough, crooked, or finished stock.

No. 386 Straight Edge Ripping and Jointing Machine

Saves $33\frac{1}{3}$ to 50 per cent. in Wages, 10 per cent. in lumber and also uses up your waste stock

NOTE—Saw cuts from below and all sawdust and slivers are drawn down and away from the saw and do not scatter over the work and get into the operator's eyes, ears, nose and mouth, as in the case where saw cuts from above.

Circulars fully describing this new machine will be gladly mailed to all interested parties

Jackson, Cochrane & Company
KITCHENER - CANADA

The "Shimer Limited" Expansion Head

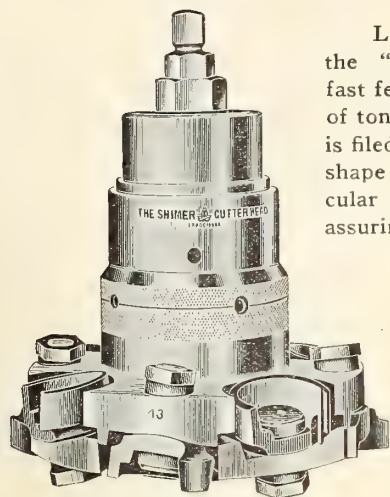


Fig. 627

Let us draw your attention to the advantages of using the "SHIMER CUTTER HEAD" for general Mill and fast feed Planer work. The Cutter is turned to cut the shape of tongue and groove desired, so that to sharpen the cutter it is filed or ground on its face, guaranteeing the user the same shape of cut during the life of the cutter. The bit being circular has from $3\frac{1}{2}$ in. to 5 in. cutting length to the cutter, assuring long wearing life to the cutters.

Note that the cutter, being fastened to a concave seat on a compound angle, assures the user of the proper clearance of cutters, consequently they never burn.

These heads are fitted with or without the Self-Centering Sleeve, and made Expansion or Solid, to suit the customer's wishes.

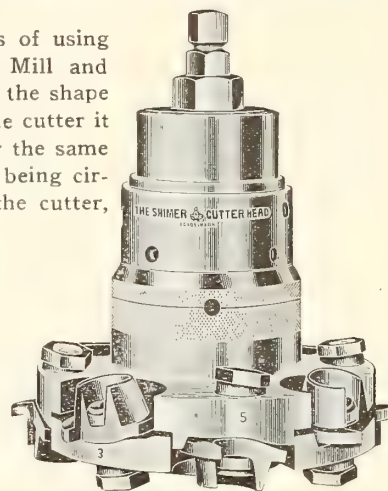


Fig. 268

Shimer Heads have been in use for sixty years, and their reliability and reputation have spoken for them in the past. Let us know your wants and we will guarantee their reliability at the present.

SHIMER CUTTER HEAD CO. OF CANADA, LIMITED

Successors to Samuel J. Shimer & Sons, Inc.

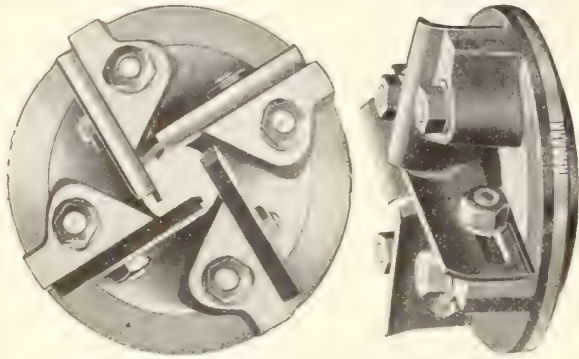
GALT, ONTARIO



For some years we have specialized on several lines of saw and cutters for box factory, gramophone cabinet and similar work. Our Beaver Dado as illustrated above has won great favor with the trade owing to its adaptability. The combination of bevel wing outside cutters with our multiple tooth inside cutter assures the user that our dado will cut across grain and not chop, thus being far ahead of the one tooth or hook type.

We solicit a trial order to prove their worth

Radcliff Saw Manufacturing Company, Limited
1550 Dundas Street West, TORONTO

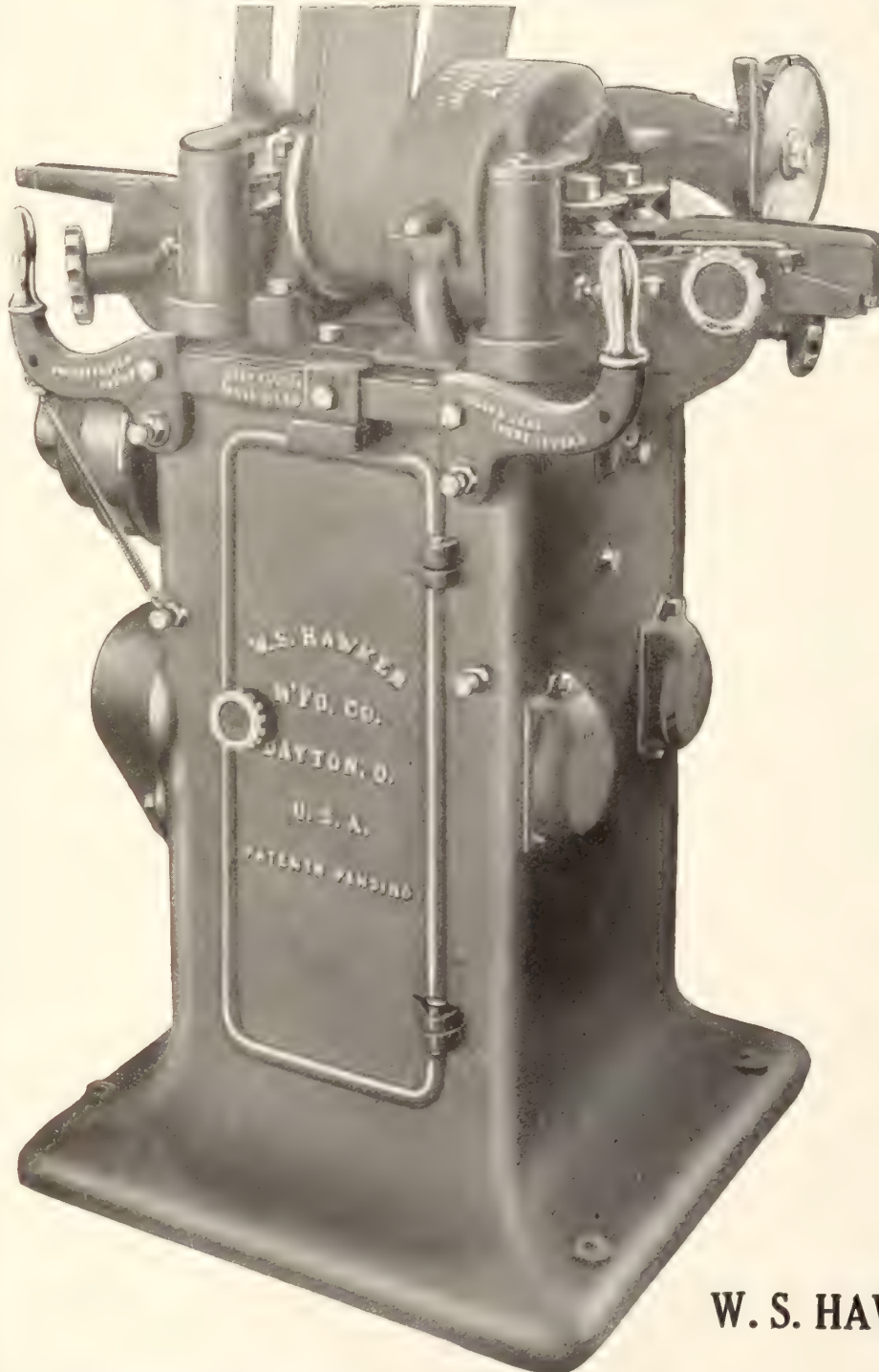


Two Heads

that have put
100% more profit
in the production
of Dowel Stock.

UNIVERSAL ADJUSTABLE CUTTER HEAD Patented.
Infringements (maker or user) will be vigorously prosecuted.

FOR SHIP TREENAILS



W. S. HAWKER.

Inventor and Designer of the World's most
efficient Tubular Turning Machinery

THE

Money Maker Adjustable Rod and Dowel Machine

The machine that is sent under a guarantee
to show you a gain of from 100 to 400 per cent.
before you buy it.

The improved dowel machine that 90 per
cent. of the largest and oldest machinery build-
ers and dealers now endorse and recommend in
preference to the solid chuck machines they
themselves previously built.

One cutter head turns from 1/4 in. to 2 in.
diameter.

Turns hard or soft wood equally well.

Handles heavy, oversized squares.

No choking of the cutter head.

Smooth stock.

Accurate sizes.

Works stock as short as five inches.

Rolls automatically centre variations in
squares.

Machines built to turn from 1/8 to 6 in.

We want to hear from every user of a solid
chuck dowel machine.

We can save you from one dollar out of
every two, to four out of every five, that the
operation of solid chuck machines costs you.

Engagements for competitive test solicited.

Formal orders not solicited. All sales made
after demonstration.

The only question is, are you willing to cut
cost of your dowel turning to one-half or one-
third of what it costs with any make of solid
chuck machine?

Machine delivers the goods before you buy.

State conditions of stock closely.

Special conditions require special equipment.

W. S. HAWKER MFG. COMPANY

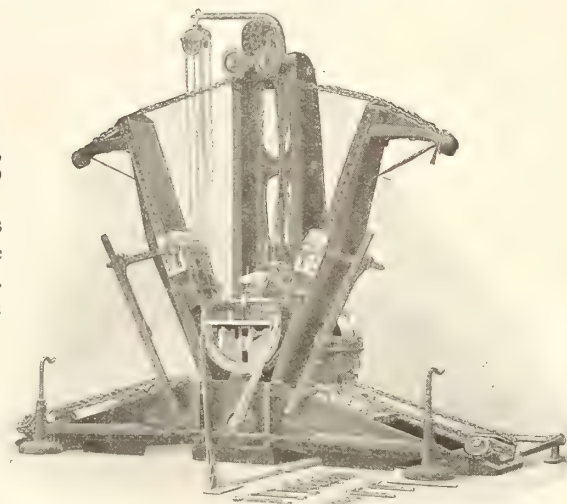
DAYTON, OHIO.

Why Struggle Along Continually With Obsolete Wood Bending Methods

when a little time spent investigating Defiance bending machines would lead to the salvage of your present material wastage—increase your present output, and reduce losses in breakage to a minimum. Defiance bending machinery is serving wood benders everywhere throughout the world. Its success, so pronounced and so long continued, proves Defiance methods of wood bending the most correct in use today.

DEFIANCE HIGH PRODUCTIVE WOOD BENDING MACHINERY

is built in various designs and sizes, and particularly adapted to bending rims for artillery wheels, automobile, auto-truck, wagon and carriage wheels, table rims, plow and truck handles, hames, bows for vehicle tops, and steering wheel rims. For the complete manufacture of the foregoing products many of the largest manufacturers all over the world are using Defiance equipment—all of which is a proven success and high productive machinery.



12" Patent Rim, Felloe and Round Bending Machine

Illustrated and descriptive matter on your requirements in wood bending machinery will be mailed on request.

THE DEFIANCE MACHINE WORKS

New York City

DEFIANCE, OHIO, U.S.A.

London, England

You Have Paid for an Installation of Chapman Double Ball Bearings

in Your Factory over and
over again, BUT—

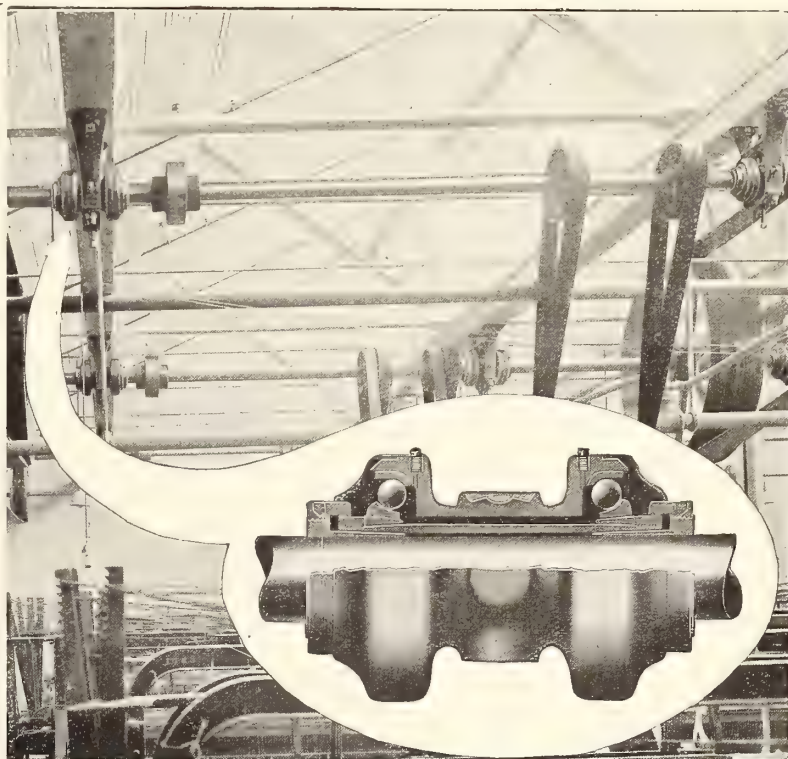
HAVE YOU GOT THEM?

Ordinary line shafting wastes 15 per cent. to 60 per cent. of power.

Line shafting equipped with Chapman Double Ball Bearings will eliminate about 75 per cent. of the friction, thus averaging a total saving of from 15 per cent. to 30 per cent.

Chapman Double Ball Bearings fit any adjustable hanger and require oiling and attention only once a year. No extra equipment required to install.

Send for Catalog No. 3 C.



The Chapman Double Ball Bearing Co. of Canada, Limited

Toronto

339-351 Sorauren Ave.

Ontario

American Branch: The Transmission Ball Bearing Co., Inc., 32 Wells St., Buffalo, N.Y.

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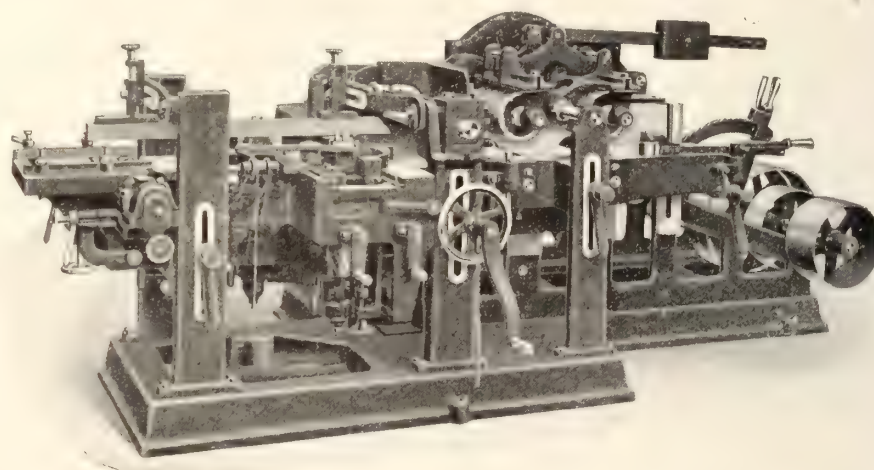
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(Continued on page 14)

Moulder No. 289

10" or 12"

Table lowers 8"

Full of Distinctive
Features

Cowan Woodworking Machinery is dependable, efficient and creates a great saving in operating costs. We manufacture

Planers
Moulders
Shapers
Tenoners

Mortisers
Borers
Lathes
Resaws

Band Saws
Scroll Saws
Cross Cut Saws
Rip Saws

Sanders
Grinders
Clamps
Veneer Presses

COWAN & CO. OF GALT LIMITED - Galt, Ontario

Greetings of the Season

To our many Friends in the woodworking industry, we extend our Heartiest Good Wishes for a Joyous Christmas. May the coming year bring prosperity in abundance and may "Preston" Woodworking Machinery be responsible in no small measure

The "Peer" of All Taping Machines

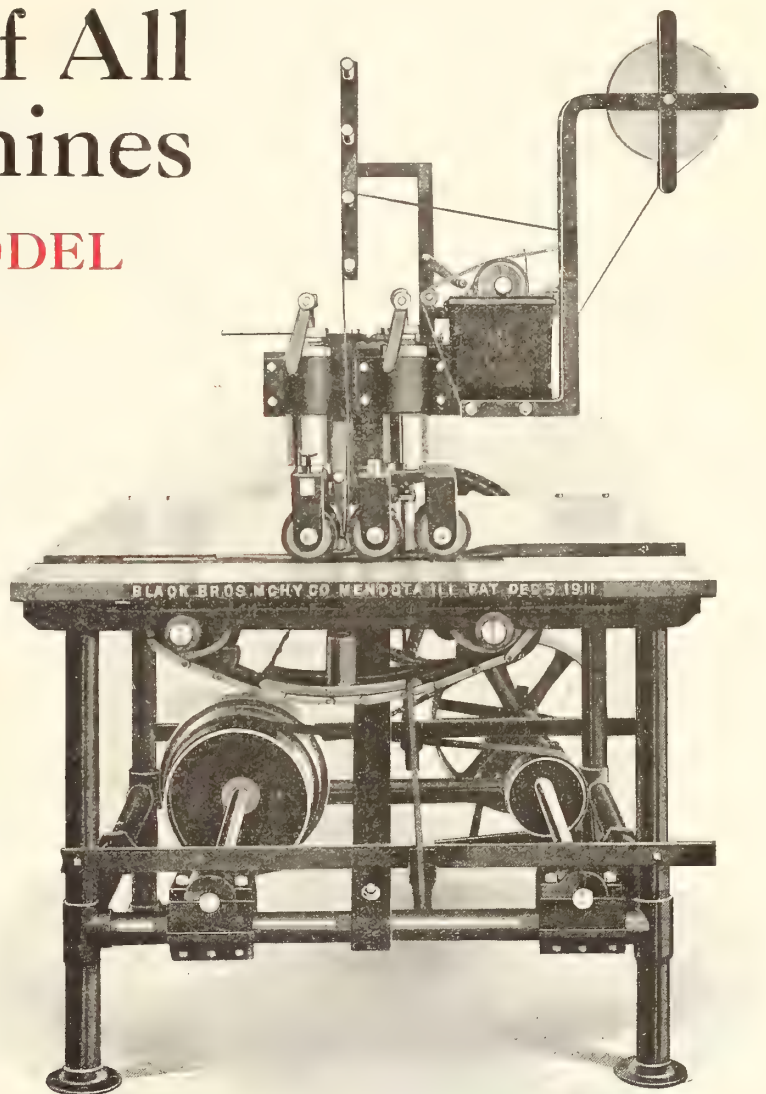
BLACK BROS. MODEL

The Black Bros. Veneer Taping Machine is doing good work in the veneer rooms of many of Canada's largest factories. It is doing this work so speedily and efficiently that the owners are of one accord in praising its merits. For reducing labour costs and increasing production it has no equal. It is designed to handle all thicknesses of veneer and will use either the ordinary gum tape or plain tape, applying the gum or glue as it works.

Built in two sizes, 24" and 36".

So confident are we of this machine's ability to live up to our unusual claims, that we are willing to place it in your plant on trial.

Let us give you full details.



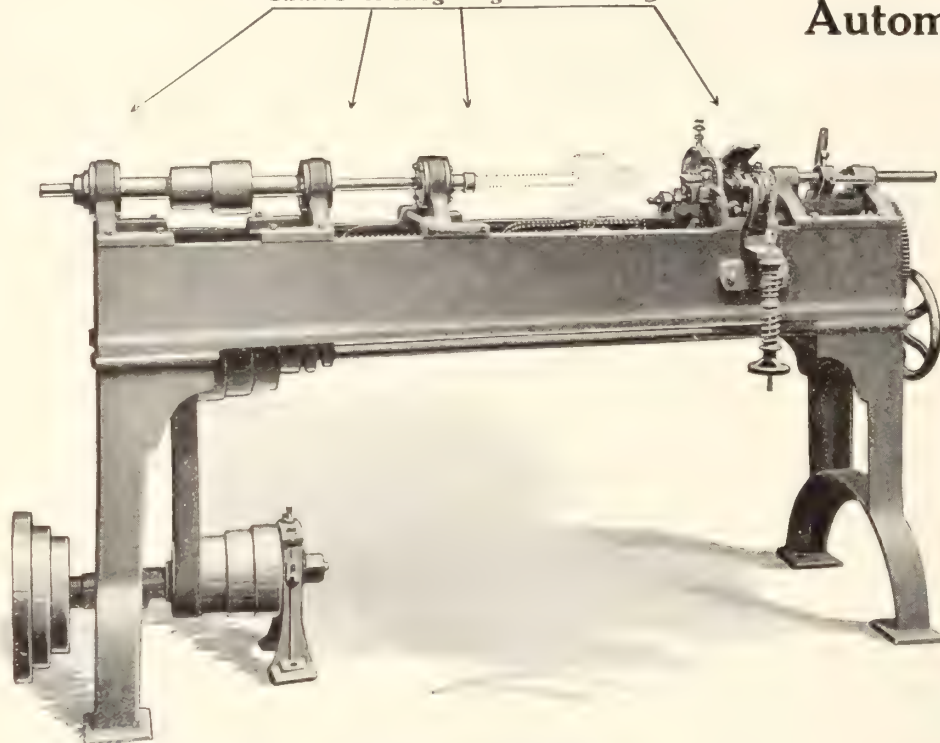
"Treat your Machine as a Living Friend."

The Preston Woodworking Machinery Co.
PRESTON, ONTARIO Limited

A Variety Turning Machine Such as You've Long Felt the Need of

What wouldn't you give for a variety turning machine in your plant—or several of them for that matter—so designed that all heating and mandrel troubles are eliminated; all friction on the wood, after it has been turned round with the roughing knife, done away with; in fact, all troubles overcome which retard operation? Such a machine is here—the new C. W. Smith.

S.K.F. Self Aligning Ball Bearings



Automatic Self-feeding Variety Turning Lathe

It is the result of many years' experience in the operation, development and manufacture of wood turning machines, and now constitutes a great forward step in this class of machinery.

The feeding device is so arranged that the feed can be changed by simply moving the belts from one cone to another, covering a range of 5 strokes to the minute, from 15 to 70.

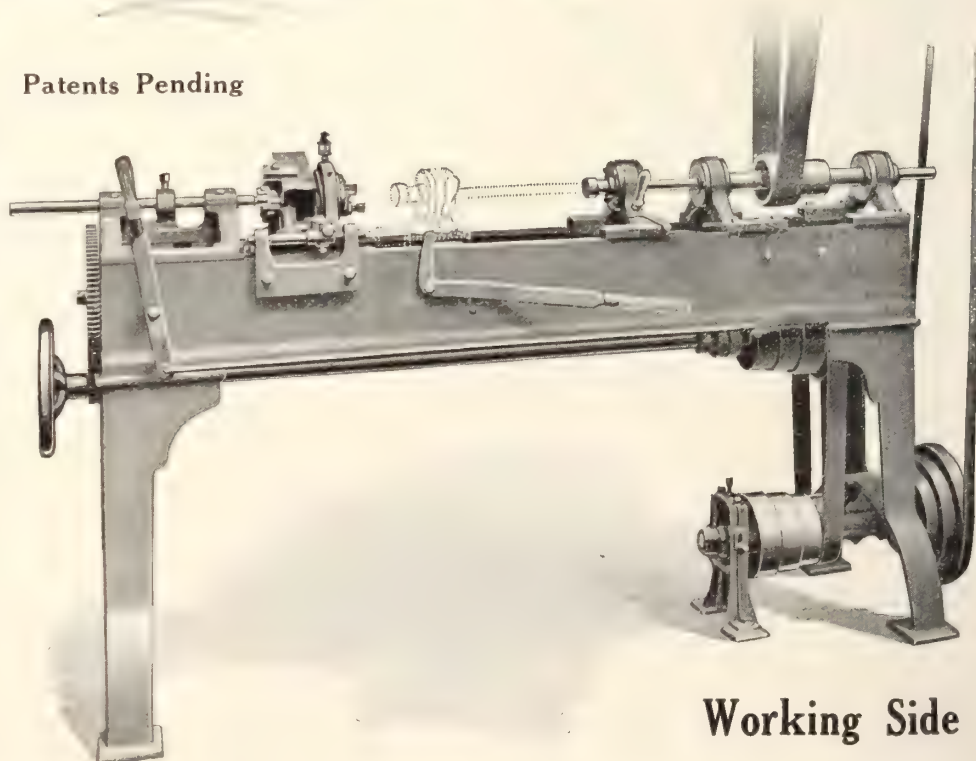
Patents Pending

The swinging cutter-head moves in all directions as well as a circular motion, thus enabling the operator to set knives where they cut the wood at all times.

Cutters are made up 7-in. long, without slots, and will turn ten times as many pieces as slotted cutters and do the work much better.

All kinds of plain and fancy work can be turned, from the smallest item up to 1¾-in. diameter and 7-in. long, in all kinds of wood.

Full details of this machine are given in pamphlet No. B-42, free on request.



Working Side

C. W. SMITH, M. E., 503 Grandville Ave., Grand Rapids, Michigan

STUTZMAN ROUND SAFETY CYLINDER HEADS

**For Jointers, Buzz Planers, Moulders and Surfacers
The Knives Cut on Same Angle as Square Heads**

These heads are designed to meet the demand for cylinders small in diameter suited for Jointers or Pony Planers, where a well-balanced Round Safety Head is desired. They fill up the gap between the tables, so there is no danger to the operator. Very superior work is accomplished, too, aside from the safety feature.

The parts consist of the head and journal ends made in one piece, the ends of which are fitted with pulleys or one pulley, as required by the machine. The journals have a ground finish, insuring a smooth finish.

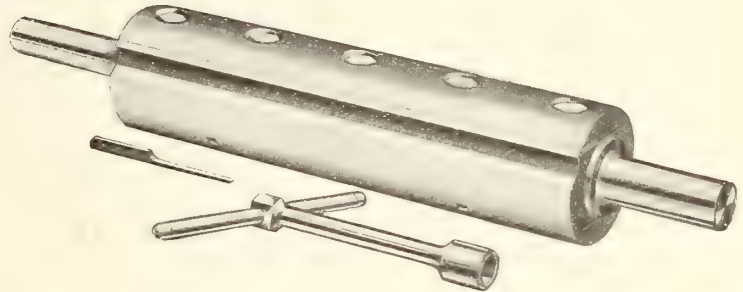
The knives are made of thin high-speed steel and clamped between self-centering caps.

The caps are drilled to admit a draft for setting the knives.

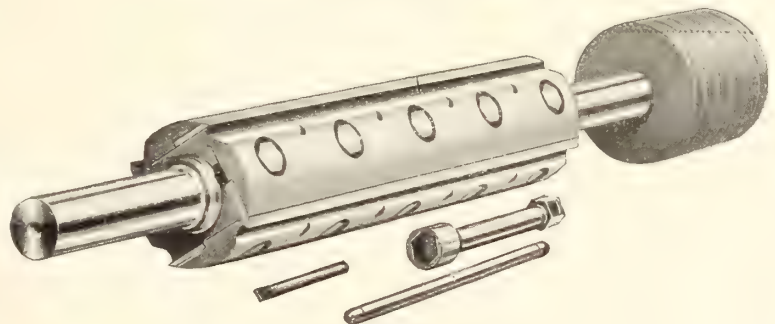
Knives are clamped from the heel of the cap to the front of knives, making it impossible for the chips to get under them.

Novelty knives can be attached to these two and four knife heads.

Gauge for setting knives, also wrench are furnished.



PATENTED



PATENTED

**Jointing Heads for Shapers
Shaper Guards**

**Electric Grinders for Grinding Knives
without Removal from Machine**

ASK FOR CIRCULARS

Fischer Manufacturing Company
Williamsport, Pennsylvania



Certificate of Approval Awarded by State of Pennsylvania

Gold Medal Awarded 1914,
New York City

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DRY STOCK

Ready for Shipment

GUM

11,428 ft.	6/4 1st and 2nds Plain Red
71,135 "	6/4 1st and 2nds Plain Sap
51,126 "	6/4 No. 1 Com. and Select Sap
60,600 "	4/4 1st and 2nds Red
11,859 "	4/4 No. 1 Com. & Select Red
62,242 "	1 x 13-17" Box Boards
15,000 "	1 x 9-12" Box Boards
15,397 "	13" and up 1st and 2ds Sap
76,494 "	4/4 1sts and 2nds Sap
91,246 "	4/4 No. 1 Com. and Sel. Sap
100,125 "	6/4 No. 1 Com. and Sel. Red
81,246 "	4/4 No. 2 Common Sap
8,000 "	5/4 No. 2 Common Sap
129,080 "	6/4 No. 2 Common Sap
21,000 "	5/4 No. 3 Common
17,060 "	6/4 No. 3 Common Sap

LA. CYPRESS

12,366 ft.	4/4 1sts and 2nds
58,725 "	Select
223,085 "	4/4 No. 1 Shop
108,000 "	4/4 No. 1 Common
18,205 "	4/4 No. 2 Common
9,000 "	4/4 No. 3 Common
27,695 "	4/4 Peckie
5,000 "	6/4 Select
7,010 "	6/4 No. 1 Common
8,000 "	6/4 No. 2 Common
7,263 "	6/4 Peckie
7,590 "	8/4 1sts and 2nds

11,021 "	8/4 Select
7,106 "	8/4 Shop
11,220 "	8/4 No. 1 Common
11,150 "	8/4 No. 2 Common
2,250 "	8/4 Peckie
6,125 "	5/4 No. 2 Common
5,696 "	5/4 Peckie

PECAN

24,125 ft.	8/4 No. 2 Com. and Btr.
5,724 ft.	8/4 No. 3 Common

6/4 & 8/4 DOG BOARDS

31,000 ft.	Cypress, mostly 6/4
14,142 "	Cypress, mostly 10/4

RED OAK

14,930 ft.	10/4 No. 1 Com. and Sel.
11,080 "	10/4 No. 2 Common
11,527 "	4/4 No. 1 Com. and Sel.
39,247 "	4/4 No. 1 Com. and Sel.
11,249 "	5/4 No. 1 Com. and Sel. Pl. Red
18,114 "	4/4 No. 2 Common
5,400 "	6/4 1sts and 2nds Pl.
13,425 "	3/4 No. 3 Common
73,190 "	4/4 No. 3 Common
19,118 "	4/4 No. 1 Com. and Sel. Qtd.
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9,186 "	4/4 No. 2 Com. & Btr. Qtd. White
12,465 "	4/4 No. 1 & No. 2 Plain Mixed

51,246 "	4/4 Sound Wormy
42,464 "	4/4 Log Run

LA. WHITE ASH

1,355 ft.	4/4 No. 1 Common
1,870 "	4/4 No. 2 Common
12,416 "	5/4 No. 1 Common
36,164 "	5/4 No. 2 Common
11,672 "	6/4 No. 1 Com. & Btr. 35% FAS
12,400 "	8/4 No. 2 Common
1,540 "	4/4 No. 3 "
67,584 "	5/4 No. 3 Common
10,564 "	6/4 No. 3 Common
28,250 "	8/4 No. 3 Common
960 "	8/4 No. 1 Com. & Btr.
1,695 "	4/4 Log Run
1,780 "	2", 3" Log Run
Can cut and ship green.	
2 cars 10/4, 12/4 No. 2 Com. and Btr.	

COTTONWOOD

5,030 ft.	4/4 1sts and 2nds
3,246 ft.	4/4 Log Run

ELM

6,230 ft.	8/4 Log Run
5,820 "	4/4 Log Run
2,500 "	2 1/2", 3" Log Run
17,141 "	8/4 No. 2 Com. and Btr.
2 Cars 10/4, 12/4 No. 2 Com. & Btr.	

ABERDEEN LUMBER COMPANY
PITTSBURGH, PA.



SERVICE



You Will Appreciate

Prompt and reliable are our shipments of your needs. Our select timber tracts enable us to meet your demands for hardwoods of quality in any quantity exactly as you demand and expect.

Quality that you will remember and service you won't forget is what we aim to give you.

Why not drop us a line today stating your needs? Let us prove our statements to you.

Memphis Bandmill Co.

Memphis, Tenn., U.S.A.

Boland Lumber Company

Murray Bldg., Grand Rapids, Mich.

Manufacturers Northern and Southern Hardwoods

Northern Woods :

***Ash, Basswood, Beech,
Birch, Hard Maple,
Quartered Maple,
White Maple, Soft Maple,
Soft Elm, Rock Elm.***

Southern Woods :

***Cherry, Chestnut,
Cottonwood, Cypress, Gum,
Hickory, Magnolia,
Oak, Poplar, Sycamore,
Walnut, Willow.***

***Please send us your inquiries and it will be a
pleasure to quote you and describe our stocks***

Felger Lumber and Timber Company

MANUFACTURERS AND WHOLESALERS

NORTHERN AND SOUTHERN HARDWOODS

Main Office:
GRAND RAPIDS
733 Mich. Trust Bldg.

Southern Office:
MEMPHIS, TENN.

F. T. DOOLEY, President.

T. E. JONES, Secy.-Treas.

F. T. Dooley Lumber Co.
Inc.

MANUFACTURERS and WHOLESALERS
of

**SOUTHERN
HARDWOODS**

Plain and Quartered Oak
Cypress, Gum, Ash
Soft Maple and Elm

Send us your inquiries

Memphis ∴ ∴ Tennessee

Hardwoods

We can furnish you immediately Factory Stock including all grades and thicknesses of

**Walnut, Chestnut
Mahogany, Teak, Oak
Ash, Cypress**

ALSO

VENEERS

Oak, Maple, Walnut and
other Fancy Woods

The McLennan Lumber Co.

Limited

MONTREAL

**American Hardwood
Lumber Co.**

St. Louis, Mo.

Large stock of—

**Dry Ash, Quartered Oak
Plain Oak and Gum**

Shipments from — NASHVILLE, Tenn.,
NEW ORLEANS, La., and BENTON, Ark.

**Aromatic
Tennessee Red Cedar**

CAR LOAD LOTS
OR LESS

Earthman Lumber Co.
Murfreesboro, Tenn.

Indiana

Quartered Red and White

OAK

1,000,000 feet of dry stock carried
at all times

ALSO PLAIN OAK AND ASH

We manufacture all stock carried

Evansville Band Mill Co.

FRANK M. CUTSINGER, Pres.
GEO. H. FOOTE, Vice-Pres. & Treas.
JOSEPH WALTMAN, Secretary

Mills at EVANSVILLE, Indiana

SPECIALS!

For Immediate Shipment

QUARTERED RED GUM

10 cars 2" 1s and 2s.
5 " 2½" Common and Better.
5 " 3" Common and Better.

PLAIN SAWED RED GUM

5 cars 2½" Common and Better.
5 " 3" Common and Better.
4 " 1½" 1s and 2s.
5 " 1" Common.
10 " 1¼" Common.

QUARTERED SAWED WHITE OAK

10 cars 1" No. 1 Common and Better.

Thomas & Proetz Lumber Company

No. 3400 Hall St. St. Louis, Mo.

Perfection in Quality and Service

Service that is prompt and accurate is a big factor in our dealings and at the same time the acme of quality always prevails. We make a specialty of supplying Sap, Red Gum, Crating and Southern Hardwoods. Let us know your requirements in factory stock including all grades and thicknesses of Cypress, Sap, Red Tupelo and Black Gum, Cottonwood, Oak, Elm, Sycamore and Ash. We can ship immediately on receipt of your order.

Cornelius Lumber Company

ST. LOUIS, Mo., U. S. A.

ATTENTION:

"Auto Body and Furn. Manfgs."

We are one of the few firms
in the country handling

White Ash Exclusively

We sort it to meet all requirements. **Tough** texture and **Medium** texture. Can furnish **Special Widths** and **Lengths** one to four inches thick. Write or wire when needing WHITE ASH.

THOMPSON, KATZ LUMBER CO.

Memphis, Tenn.

Cable Address "TomKatz"

Efficiency Marks Every Step of Our Service to You



Exact photograph of alley in our yard

White and Red Oak

Plain & Quarter Sawed
Red Gum

Our Specialty
Quarter Sawed
Red Gum in Plain
and Figured Wood

From the cutting to the delivery to your hands, our entire stock receives the most careful attention. All the excellence of quality and the beauty of the wood is kept just as it is when cut. When next you are in need of Oak, Ash, Elm, and Cypress of first class quality and in perfect condition write us. We can ship promptly.

BARR-HOLADAY LUMBER CO.

BAND MILL AT LOUISE, MISS.

GREENFIELD, OHIO

SOUTHERN HARDWOODS

Dry Lumber in Buffalo for
Quick Shipment

WHITE ASH			
	Clear	No. 1	No. 2
1 & 2	Strips	Com.	Com.
1 in.	800	36,000	75,000
1 1/4 in.	69,000	15,500	4,000
1 1/2 in.	33,500	5,200	51,000
2 in.	82,300	500	119,000
2 1/2 in.	6,500	2,000	1,500
3 in.	10,500	5,500	2,500
4 in.	1,500	300	500

BUTTERNUT			
	Clear	No. 1	No. 2
1 & 2	Strips	Com.	Com.
1 in.	17,300	15,800	23,600
2 in.	8,400	17,000	10,000
2 1/2 in.	3,000	3,000	

CHERRY			
	Clear	No. 1	No. 2
1 & 2	Strips	Com.	Com.
1 in.	177,000	8,000	139,200
1 1/4 in.	11,500	3,600	2,000
1 1/2 in.	41,000	31,700	70,300
2 in.	10,100	16,200	31,300
2 1/2 in.	2,500	1,100	1,200
3 in.	17,700	500	3,300
4 in.	9,900	2,200	1,600

CHESTNUT			
	Clear	No. 1	No. 2
1 & 2	Strips	Com.	Com.
1 in.	79,900	33,300	140,500
1 1/4 in.	125,800	1,800	58,200
1 1/2 in.	90,500	55,000	20,000
2 in.	28,200	65,200	107,200
2 1/2 in.	1,000	1,150	
3 in.	2,800	1,300	
4 in.	1,500	300	

PLAIN RED OAK			
	Clear	No. 1	No. 2
1 & 2	Strips	Com.	Com.
1 in.	30,200		
1 1/4 in.	131,000	44,400	20,200
1 1/2 in.	10,500	87,000	18,600
2 in.	243,200	21,000	47,400
2 1/2 in.	107,700	2,400	13,200
3 in.	117,300	13,300	15,200
3 1/2 in.	53,100	84,800	12,000
4 in.	16,100	8,000	1,100
4 1/2 in.	28,800	12,500	3,000
5 in.	13,600	7,900	

PLAIN WHITE OAK			
	Clear	No. 1	No. 2
1 & 2	Strips	Com.	Com.
1 in.	20,150		
1 1/4 in.	80,200	115,000	28,000
1 1/2 in.	33,300	80,000	50,200
2 in.	73,300	10,000	8,000
2 1/2 in.	37,500	20,000	12,000
3 in.	21,000	60,000	23,000
3 1/2 in.	116,800	17,500	1,000
4 in.	75,800	15,800	4,100
4 1/2 in.	5,500	3,000	1,500
5 in.	60,000	13,500	18,000

QUARTERED RED OAK			
	Clear	No. 1	No. 2
1 & 2	Strips	Com.	Com.
1 in.	300	1,700	
1 1/4 in.	20,200	2,300	
1 1/2 in.	2,000		
2 in.	1,000	7,400	

QUARTERED WHITE OAK			
	Clear	No. 1	No. 2
1 & 2	Strips	Com.	Com.
1 in.	5,500		
1 1/4 in.	39,500	40,600	3,000
1 1/2 in.			
2 in.	16,400	2,400	8,000
2 1/2 in.	17,000	3,400	1,300
3 in.	15,500	8,000	
3 1/2 in.	31,500	21,100	4,700
4 in.	1,000		

POPLAR			
	Clear	No. 1	No. 2
1 & 2	Strips	Com.	Com.
1 in.	8,800	20,600	4,600
1 1/4 in.	1,200	45,000	24,200
1 1/2 in.	2,800	1,900	2,000
2 in.	4,300	300	12,000
2 1/2 in.	16,600		16,000
3 in.	25,800		28,000
3 1/2 in.	7,900		38,600
4 in.	6,000		6,300

POPLAR (Continued)			
	Clear	No. 1	No. 2
1 & 2	Strips	Com.	Com.
1 in.	13,800	22,300	2,600
1 1/4 in.	32,600	56,900	97,300
1 1/2 in.	2,600	15,600	8,000
2 in.	13,700	32,000	
2 1/2 in.	7,000	141,500	27,500
3 in.	1,500	17,000	32,000
3 1/2 in.	700	750	

BLACK WALNUT			
	Clear	No. 1	No. 2
1 & 2	Strips	Com.	Com.
1 in.	700	21,000	23,100
1 1/4 in.	100	1,300	1,200
1 1/2 in.	250	8,500	3,200

Also Large Stock of BEECH, BIRCH and MAPLE

THE ATLANTIC LUMBER CO., 310 Manning Chambers, Toronto
MANUFACTURERS SOUTHERN HARDWOOD LUMBER

Yards: BUFFALO, N.Y.

Mills: KNOXVILLE, TENN.; FONDE, KENTUCKY

"Christmas Greetings"

*"We wish you and yours a
most joyful Christmas, a
happy and healthful
New Year."*

GAYOSO LUMBER COMPANY
MEMPHIS, TENN., U.S.A.

Reese Sheriff Lumber Co.

WILLIAMSPORT, PENNSYLVANIA

Manufacturers of

Northern and Southern Hardwoods White Pine, Spruce and Hemlock

With special attention to Oak, Chestnut, Poplar, Cherry, Walnut, Gum and Basswood.

OUR MOTTO

REASONABLE PRICES—that you can afford to pay.
EFFICIENT SERVICE — that you have a right to expect.
FAIR TREATMENT — that you can depend on getting

We would appreciate an opportunity of furnishing a portion of your lumber requirements.

Are You Prepared "To Ride the Crest" of the Steadily Rising Tide of RED GUM Popularity?

Manufacturers of Desirable Grades of Furniture, those who have their fingers on the pulse of public taste, are rapidly *increasing* their lines of good

RED GUM

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HOW IS YOUR LINE? ARE YOU "TO BAT" or on the bench, "waiting"?

The appropriate grades of **Red Gum**, "America's Finest Cabinet Wood," for good furniture (and trim), for every sort of use, are READY for PROMPT DELIVERY—and at prevailing prices are "the wisest buy for wise buyers" in the whole list of high-class furniture woods today.

Up-to-date architects and "interior landscape artists" are waking up and "giving their clients what they want"—i. e., **Red Gum**. (*ARE YOU?*) IT WILL PAY YOU TO RIDE THE TIDE.

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 100,000 " 5/4 " " "
 75,000 " 6/4 " " "
 70,000 " 8/4 " " "

No. 1 Common and Better Chestnut

100,000 Ft. 4/4
 100,000 " 6/4
 100,000 " 8/4 60% 14 and 16 feet long,
 50 to 60% 10" and wider.
 15,000 " 4/4 FAS Plain White Oak.
 75,000 " 4/4 No. 1 Com. Pln. Wh. Oak.
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I have also a car of 4/4 No. 1 C & B Tennessee Red Cedar in transit.

I can make immediate shipment of Crating Lumber, Excelsior and Wood Wool.

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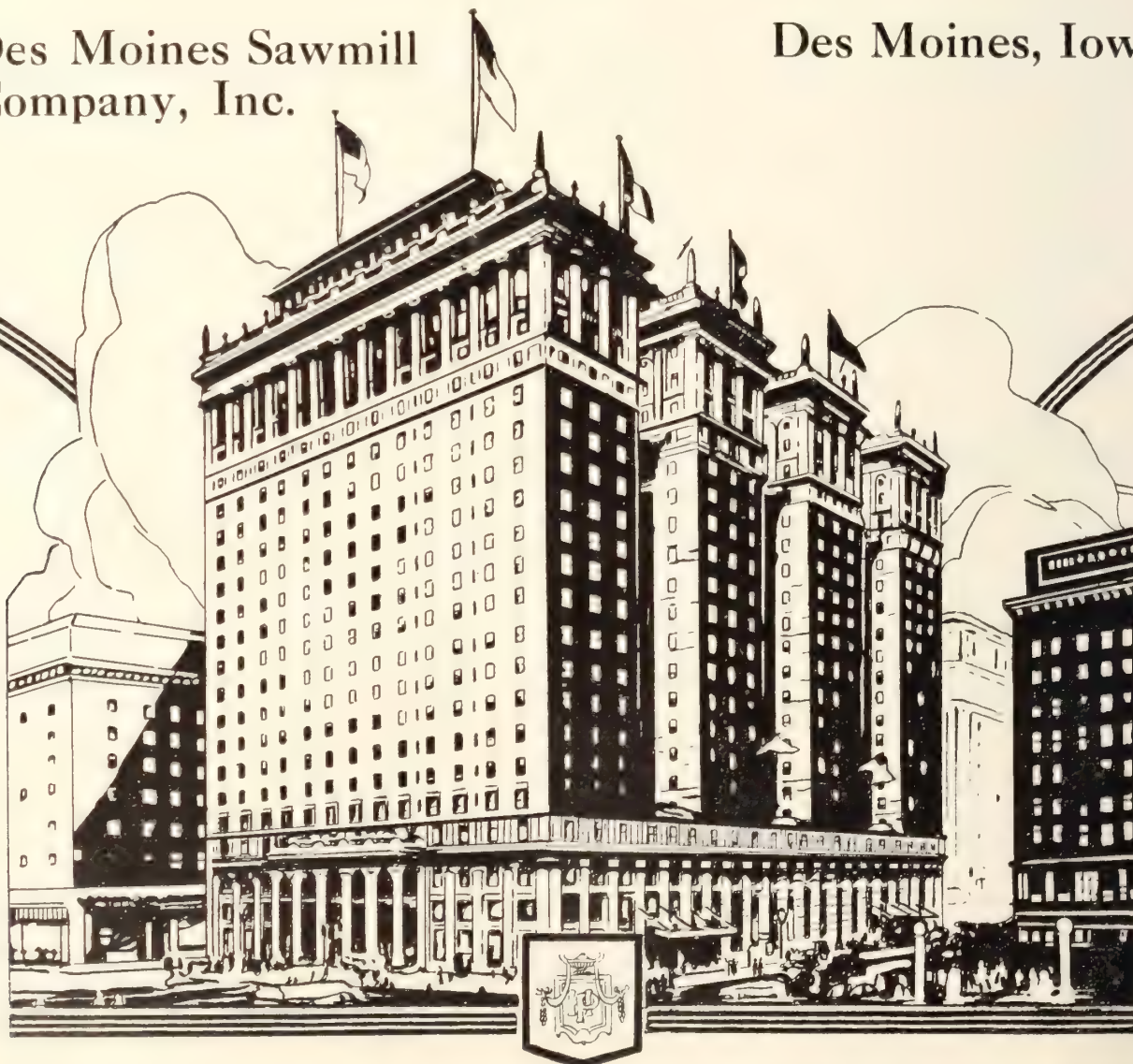
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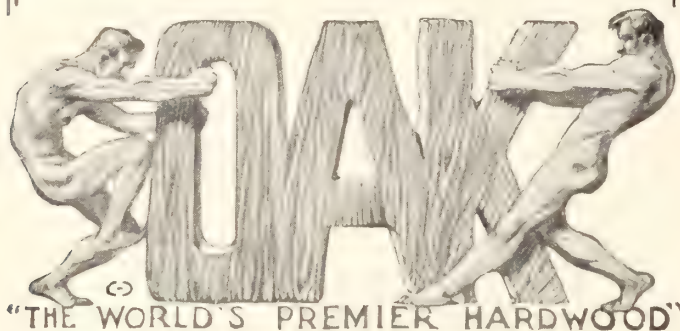
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"THE WORLD'S PREMIER HARDWOOD"

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"A WHISPER IS ENOUGH"**

From **FILING CABINETS** and other Office Furniture to "the bones of great ships"—OAK is **OAK**. (Supreme.)

From **DELICATELY CARVED FURNITURE** for the **DILETTANTE TASTE** to the sills and ribs of great structures whose nobility is in their sheer strength (and to the historic beams of Westminster Abbey) OAK is **OAK**. (Supreme.) **GOOD OAK FURNITURE** is **"COMING IN."**

Without a rival, without an apology, without a substitute, OAK is indeed

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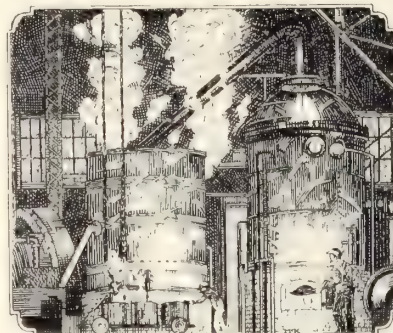
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Timbers, in fact almost
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6/4 " " "	50,000
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4/4 Box Boards, 13/17"	100,000
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4/4 1st & 2d 13/17"	100,000
4/4 1st & 2d—6" and wider	50,000
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5/4 " " "	13,000
6/4 " " "	300,000

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4/4 No. 1 Common	150,000
4/4 No. 2 Common	15,000
5/4 1st and 2d	5,000
6/4 " "	4,000
6/4 Common and Better	19,000
8/4 No. 2 & 3 Common	50,000

QUARTERED RED GUM

3/4 Common & Better	2,000
4/4 " " "	5,000
5/4 " " "	1,500
6/4 No. 1 Common & Better	35,000
8/4 " " "	75,000

FIGURED RED GUM

4/4 1st and 2d—Plain	20,000
4/4 No. 1 Common	35,000
5/4 " " "	500
6/4 Common & Better	11,000
4/4 1st and 2d	15,000
4/4 No. 1 Common	15,000
8/4 1st and 2d	15,000
10/4 " "	11,000
12/4 " "	2,500

SOFT ELM

4/4 Log-run	50,000
5/4 " "	175,000
6/4 " "	50,000
8/4 " "	100,000
10/4 " "	30,000

PLAIN WHITE OAK

4/4" 1st and 2d	75,000
4/4 No. 1 Common	150,000
4/4 No. 2 Common	50,000
10/4 Common & Better	23,000
12/4 Common & Better	13,000

QUARTERED WHITE OAK

4/4 1st and 2d	20,000
4/4 No. 1 Common	50,000
4/4 No. 2 Common	8,000
6/4 Common & Better	5,000
4/4 Strips	10,000

PLAIN RED OAK

3/4 Common & Better	700
4/4 1st and 2d	10,000
4/4 No. 1 Common	50,000
4/4 No. 2 Common	35,000
8/4 No. 2 Common	5,000

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---------------------	--------

MISCELLANEOUS OAK

4/4 Sound Wormy	15,000
4/4 No. 3 Common	200,000
5/4 No. 3 Common	7,000

MISCELLANEOUS

4/4 Log-run Pecan	7,000
6/4 No. 3 Pecan	50,000
8/4 & 10/4" No. 3 Pecan	3,000
4/4 6/4", 8/4" L/R Sycamore	2,500
5/4 & 6/4" No. 3 Ash	35,000
4/4 M. R. Locust	3,000
4/4 L/R Qrtd. Black Gum	22,000
4/4 L/R Pl. Black Gum	5,000

No. 3 COMMON ELM

4/4 No. 3 Common	100,000
5/4 " "	3,000
6/4 " "	75,000
8/4 " "	10,000
10/4 " "	5,000

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Red Cedar Fence Posts carlots at attractive prices. Prompt,
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4/4 to 12/4 Elm

4/4 to 8/4 Quartered Oak

4/4 to 8/4 Plain Oak

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4/4 to 6/4 Cottonwood

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are replacing their Dry Kilns
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GRAND RAPIDS VAPOR KILNS

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Our large supply of well selected logs makes it possible to produce and maintain an abundant stock of high grade walnut lumber.



A part of our log supply being cared for in a pond of water.
The picture shows surface of pond.

**All Grades and Thicknesses.
American Walnut Exclusively.**

Pickrel Walnut Company
St. Louis, Missouri

Red Gum Sap Gum Oak Tupelo

We carry a well assorted stock ready for immediate shipment of all Southern Hardwoods. Make a specialty of loading mixed cars of various grades and thicknesses for the factory trade. We issue a monthly stock sheet showing at a glance delivered prices on everything we have ready for shipment. If you are not receiving these lists, please write us.

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Sales Office

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Quality First-Service Always

Our lumber is second to none when it comes to high grade, good figure and texture and excellency in manufacture.

We offer the following items, thoroughly dry, on which we can make immediate shipment.

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10,000' 4/4" No. 1 Common	9,000' 4/4" Box Boards, 13-17"
5,000' 6/4" No. 1 Common	
4,000' 6/4" No. 2 Common	
PLAIN WHITE OAK	QUARTERED SYCAMORE
10,000' 4/4" 1s and 2s.	3,600' 4/4" 1s and 2s.
	3,600' 4/4" 1s and 2s 12" and up.
	7,500' 5/4" 1s and 2s.
	4,000' 5/4" 1s and 2s 10" and up.
QUARTERED RED OAK	11,000' 4/4" No. 1 Common.
15,000' 4/4" 1s and 2s 10" and up.	51,000' 5/4" No. 1 Common.
QUARTERED WHITE OAK	WALNUT
9,000' 4/4" 1s and 2s 10" and up.	4,000' 5/8" 1s and 2s.
4,000' 8/4" 1s and 2s .	4,000' 4/4" 1s and 2s 12" and up.
10,000' 4/4" No. 1 Com. 10" & up.	2,000' 8/4" 1s and 2s.
12,000' 5/4" No. 1 Common.	16,000' 5/8" No. 1 Common.
8,000' 8/4" No. 1 Common	2,000' 4/4" Selects.
	2,000' 8/4" Selects.
MIXED OAK	60,000' 4/4" No. 2 Common.
7,500' 10/4 and 12/4" 1s and 2s	7,000' 5/4" No. 2 Common.
Plain Oak.	5,000' 6/4" No. 2 Common.
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- 2 cars 6/4 FAS Plain Red Oak.
- 2 cars 6/4 No. 1 Com. Plain Red Oak.
- 1 car 8/4 FAS Plain Red Oak.
- 1 car 8/4 No. 1 Com. Plain Red Oak.
- 3 cars 10/4 FAS Plain Red Oak.
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Intelligent study of the principles and practices suggested in the chapters, listed below, will fix clearly in your mind the solutions for molder problems, besides giving you a fund of information on subjects allied with molder work and the operation of the machine.

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The Alignment of a Molder.
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Setting Up a Molder.
Making Under-cuts and Dovetail Grooves.
The Use of Special Guides and Forms.
Running Molding Face Down.
Special Surfacing and Milling Knives.
Braces and Knives for Heavy Work.
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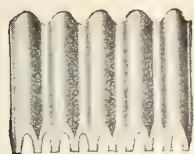
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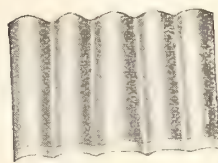
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One 26" Connell & Dengler Double Surfacers, divided roll and chip breaker.

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We buy machines for cash or exchange.

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Well Manufactured from Good Timber

Unexcelled Quality and Service

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Strict uniformity of inspection and quality year after year, with a truly superior service, have consistently kept old customers on our books.

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Mahogany (250,000 ft. in stock, all kinds)	Birch
Walnut	Basswood
Qtd. White Oak	Maple
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Poplar	Elm
Gum	Ash
And all U. S. A. Hardwoods	And all other Canadian Hardwoods.

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SAWN	Vermillion	Birch
Qtd. White Oak	Poplar	
Qtd. Red Oak		
Plain Oak	ROTARY CUT	
Mahogany (all kinds)	Birch, Poplar, Ash, Gum,	
English Oak	Walnut, Basswood, Maple	
Teak	SLICED	
Ash	Mahogany, Walnut	
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We also Specialize in

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Woodworker Publishing Company, Limited

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No. 12

Is Low Grade Lumber Economical?

There appears to be a tendency, perhaps a growing tendency, on the part of many wood users to attempt to offset the present high lumber prices by purchasing a lower grade of stock than they formerly used. They figure that, if two thousand feet of cheap material at, say, ninety-five dollars a thousand, will cut the same number of pieces as one thousand feet of better lumber at two hundred dollars, they have saved ten dollars—the difference in cost between the two lots.

Such a saving might be effected if these lumber prices were figured at the swing saw, but even if that were done, it is doubtful if a real saving would be made. As the usual method is to figure the lumber on the cars at the yard, the saving of ten dollars would quickly vanish, and it would, probably, transpire that the pieces cut from the lower grade material actually cost more than if better lumber had been used.

The reasons for this are fairly obvious. A larger quantity of lumber must be unloaded from the car, piled in the yard, if necessary, kiln dried, taken to the swing saw and, in many instances, moved about the plant before all the poor material has been eliminated. The operators of the swing cut-off and rip saws are forced to handle more stock. This large amount of handling has increased both the productive and non-productive labor costs on the articles manufactured. The increase in the proportion of non-productive labor has been particularly large.

An instance of this kind was graphically illustrated recently in the case of a large manufacturer who had been in the habit of keeping a detailed account of his labor costs and who charted the productive and non-productive labor each day. Productive labor included the time of all employees engaged in actual manufac-

turing operations, while such items as handling lumber, moving material about the plant, packing, trucking etc., were charged as non-productive labor.

The chart showed an increase in both divisions, but that of the non-productive was out of all proportion to the rise in productive labor costs. Where the ratio between the two had formerly been 100 productive to 135 non-productive, it rose as high as 100 to 193, and maintained an average of 100 to 178. This indicated an alarming state of affairs—one that demanded immediate action.

An investigation brought out clearly that this disproportionate increase was due, in the main, to two factors. An increase in the rate of pay of those employed on non-productive labor, and the other contributing item was that a cheaper grade of lumber was being worked up. The lower grade material required more labor to handle and prepare it for manufacturing.

The New Year may bring problems of its own, but whether it does or not it is required of every manufacturer that he should strive to conserve labor—utilize it to the best possible advantage—and to increase production to new high levels. It may be said that the general prosperity of Canada depends largely on success achieved along these lines. Numerous suggestions, such as installing labor-saving, production equipment, eliminating waste motion, profit-sharing, could be made, but an intimate knowledge of the grades of lumber used and purchased suggests a means of, to a certain degree, achieving both objects.

The point to be emphasized is that it is not possible to give too much thought and study to the suitability of the various grades of lumber purchased. Before deciding that a cheaper grade will cut to better advantage it might be well to consider the item of the extra labor, both productive and non-productive, required to handle the greater amount of material necessary to produce the same amount of finished product.

Every manufacturer should make a careful study of the effect of low-grade lumber and high cost non-productive labor on his overhead factor of cost.

To Our Readers:

Christmas Greetings

*Our sincere wish is for your happiness
and prosperity during the New Year.*

The Editor and Staff

Past Influences on Present-Day Interiors

Successful Reproduction Dependent Upon Consistency in General Scheme and Fidelity to Original Detail in Workmanship

IN considering the possibilities of well-designed woodwork in the interior, we are starting at the foundation of exclusive home furnishing and entering upon one of the most interesting activities of the woodworking trade. To this branch of the craft attaches a long and honorable history dating from times—hundreds of years ago—when the most elementary means were employed to differentiate between the dwelling-places of the landed proprietor and the peasant. In this field to-day we find

of our fathers will occasion regret, perhaps, that the modern tendency is to cater to public taste,—or, shall we say, public error,—rather than to a faithful reproduction of those pure styles whose inspiration was so fundamentally sound. But we are improving all the time, and public taste yields to persistent effort on the part of the educationist. That such effort is necessary is illustrated in the case of a prominent public man of very considerable means who decided to enlarge his already spacious hall to impressive dimensions. The work was designed and carried out in the Jacobean style, and would have been a credit to both the owner and the designer, had not the owner persisted in retaining a Colonial stairway leading from the hall, and its most conspicuous feature. The designer pleaded, knowing that money was no object, but eventually had to capitulate to the other's stubbornness. It was his stairway, and he meant to keep it! In such ways are designers handicapped, and thus we find hybrid productions in otherwise good homes. It is by persistent educational effort, by pointing to the baneful examples of others, and by showing the possibilities of faithful and consistent reproduction of the Tudor, the Jacobean and the Georgian that real progress is being made.

The first two illustrations show the Entrance Hall and also a Sun Room in the same Montreal residence, the dining-room of which is illustrated on the next page but one, and to which reference was contained in an article "The Reproduction of Period Furniture," published in our issue of November, 1919. All three examples show decidedly successful treatment. In the Entrance Hall, the walls and ceiling have a rough sand finish, the jambs and heads of the doorways being in hard plaster, lined out to represent stone-work. The floor is laid with red, hand-made tiles, oiled and waxed. The woodwork is in oak, the newels being inlaid with ebony. The ceiling beams, which are taken from the same old English property mentioned in the article to which we have



Sun Room of Montreal Residence, showing old, half-timbered effect.

a high degree of specialization, and it is noteworthy that some of our happiest inspiration is drawn from the work of the pioneer craftsmen of olden times.

No attempt is made in this little contribution to discuss the historical phase of the subject, the object being simply to present a brief illustrated description of a few interesting interiors—taken from the Montreal field—which serve to illustrate the subject-matter of our article, and which it is hoped may prove suggestive.

In our reference to the work of earlier craftsmen, we are going back in our mind no further than to the old-time country house, whose walls were covered, perhaps, two-thirds wood, with the remaining portion above in tapestry, the ceiling being of oak beams roughly plastered in between. A suggestion of our meaning is found in the Sun Room of a Montreal residence, illustrated herewith. Such work, which is being reproduced thus successfully in our own day and generation, had its origin in the plentiful supply of lumber available in those early days, and in the simple good taste which then prevailed.

Even passing reference to "the simple good taste"



Entrance Hall of Montreal Residence, designed and carried out in the Tudor period.



Entrance Hall and Staircase in quartered white oak at the residence of Norris P. Bryant, Esq., Montreal.

referred above, are left with the adzed surface finish. In keeping with the Period which it is designed to reproduce, the heating is placed in the least conspicuous place,—over the vestibule doorway, so as not to detract from the impression that one is entering a genuine, old-time residence.

The atmosphere of this fidelity is found no less in the Sun Room, on the opposite page. Here the reader will also note the old oak beams left with the adzed

surface, with plaster filled in between, the whole conveying the old half-timbered effect.

In one of the larger illustrations we show the entrance hall and staircase of the residence of Mr. Norris P. Bryant, of Montreal. This work is done in quartered white oak, with a natural varnished and polished finish. Here the influence of early design will be found in the panelling, this also being applicable to the mahogany panelling in the Butterick store,



Mahogany Panelling and Fixtures in the Butterick's Patterns Store at Montreal.

another of our illustrations. The last is a good example of the application of sound principles of design to modern business premises.

The illustrations, perhaps, help to trace the evolution from past to present craftsmanship. One often hears the remark—"In the good old times when a job was well done." This discredits, quite unfairly, the work of present-day machinery. The best modern reproductions prove that work is done quite as well to-day as it was in olden times, when conditions were so vastly different. One reflects that those were the days before power machines and kiln-dry lumber. Time was no object, lumber was plentiful and close at hand,—the work being carried out in oak, of which an unlimited supply was available. The pit sawyers would be at work splitting the logs and stacking the boards, so that the wind could blow through freely and get the lumber into that "half-dry" state in which it could be worked easily. (It was this working of

inal work, while carried out in a fraction of the time

The illustrations in this article are by the kind co-operation of Messrs. Henry Morgan & Company, Limited, of Montreal, under whose design and supervision, and in whose factories the work was executed.

Lighting and Increased Production

Scientific lighting is something to which more attention should be paid in home, office and workshop, particularly in this northern region where we all suffer from the dull uncertain daylight in winter and the bad application of artificial light to desk or work bench.

It is not sufficient to flood factories with glaring lights; such excessive illumination is, rather, wasteful and unhealthy. The use of electricity has lessened the dangers to health but have not by any means been eliminated by its use. What we suffer from to-day is not lack of light but poor arrangement of it. If it is important for efficiency in industry that expensive machinery be installed, it is equally important from the standpoint of increase of output that the lighting conditions should be suited to each individual, machine, and class of work. Every employer should realize that good lighting is justified on economic as well as on humanitarian ground.

In the United States, at the present time, at least five of the states have adopted legislative codes on industrial lighting. Many examples have been given where, as a result of improved lighting conditions, increases in output of over 8 per cent. have been achieved, while there has been a reduction in the amount of spoiled work. This increase in efficiency took

place without any additional effort on the part of the men. Better lighting seemed to tone up the whole factory organization.

Urge Uniform Compensation Laws

S. Price, chairman of the Ontario Workmen's Compensation Board, was chosen President of the Association of Canadian Workmen's Compensation Boards, which met recently in Vancouver, B.C. E. S. H. Winn, chairman of the B. C. board, vice-president, and Mr. B. Wormith, Toronto, elected secretary. The Association will endeavor to bring about uniform legislation among the different provinces. Among the resolutions passed was one asking that the benefits of the compensation laws be extended to all wage earners whose average annual earnings are less than \$2,000, another asking that the boards be invested with power to impose accident prevention measures.



The dining-room of a Montreal residence.—An inviting interior which illustrates the possibility of design and workmanship in the oak panelling and furniture.

(See also "The Reproduction of Period Furniture" in the November, 1919, issue of The Canadian Woodworker).

the material by hand that was productive of the ease and freedom found in old examples of craftsmanship, and now so much admired). Joiners would be planing and sizing, mortising and tenoning, moulding and grooving, and assembling ready for fixing.

Consider the amount of labour and the length of time employed, and then compare the conditions with those of today. One can imagine the effect it would have produced on those old workmen of three or four hundred years ago if one had confronted them with one of our present-day contracts, with its hard and fast requirements, and its penalty clause. But this is a digression.

The Past continues to exercise its wholesome and modifying influence, and it is gratifying to find that in the best of our work,—that in which we can give the necessary painstaking attention to detail, the reproductions of today are equally as good as the orig-

A Pioneer Woodworking Industry

George Roberts, Montreal.

More or less romantic interest attaches to pioneer effort. It is always interesting to trace the connection between the activities of the "good old days" and those of our own day and generation; moreover, the contrasts are illuminating as to the progress we are making. Here is a little story, with a few illustrations, showing how the traditions of one of Montreal's pioneer woodworkers have been handed down from father to son.

Something more than a decade before Confederation, and about the time that England was hanging breathlessly upon events in the Crimea, there was founded by the late George Roberts in the city of Montreal a general contracting and woodworking business which is still being carried on by his son in the old premises on Lagauchetiere Street West.

The Montreal that George Roberts knew in that year of 1854 was a very different city from the commercial metropolis of the present day with which we are acquainted. The population was only about 65,000, it was served by only one railroad,—the Grand Trunk, and its streets were innocent of even the "good old" horse-drawn tram car, which did not make its appearance until ten years later. Contrast this with the Greater Montreal of 1919—shall we say of 1920—with its three-quarters of a million inhabitants!

The late George Roberts passed away nearly twenty years ago and left the business to his three sons, two of whom retired in 1913, leaving the proprietorship to the youngest son, John James Roberts, the present owner.

By the standards of a new country, the business established by George Roberts has thus quite a long and honorable record, and it is interesting to find that on the same sound, conservative principles laid down by its founder, it is still flourishing and taking its part

to-day in turning out some of the highest grade products of the woodworking industry.

When John James Roberts succeeded to his father's business, he brought with him the accumulated experience of nearly forty years' practical training in all branches of the industry. His reminiscences are interesting. Born in 1860, he started work in his father's shops in 1875. He stuck to the job, absorbed the best in the good all-round practical experience of his father, and finally assumed the reins of management and proprietorship. He is a conspicuous example of the success attached to small beginnings,—when such beginnings have the foundation of sound, practical training and business efficiency.

The operations of the firm are still carried on under the name of its founder, George Roberts. Its later activities have embraced some of the most interesting constructional work in the city of Montreal, particularly in the field of high-grade interior wood work, of which it makes a specialty. The firm has carried out contracts for elaborate

woodwork and interior finish in many notable Montreal buildings, including the Library, Physics Building, and new Medical Building of McGill University, and some of the main buildings of MacDonald College at St. Anne de Bellevue, as well as for a number of prominent residences. The most interesting contract



Mr. J. J. Roberts.

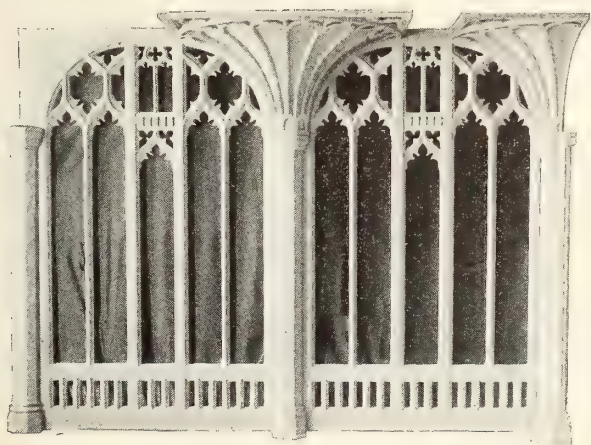


Fig. 1.—Detail of oak screen.

These two details are reproduced from photographs of the actual work which Mr. Roberts is carrying out for the Commons Chamber of the new Houses of Parliament at Ottawa. The whole is being executed in quartered white oak, with cabinet finish.



Fig. 2.—Detail of pilasters under gallery.



Fig. 3.—An attractive staircase of quartered white oak at the home of Col. Herbert Molson, of Montreal.

now in hand is for the Commons Chamber of the Houses of Parliament at Ottawa. Details of this work are shown in two of the accompanying illustrations, the photographs from which they are reproduced having been taken especially for *The Canadian Woodworker*. We refer to Figs. 1 and 2. In Fig. 1 we

have an oak screen, three of which will be placed at each side of the Speaker's platform. The reader will notice the way in which the work is divided by pilasters, the centre column carrying the fan vaulting under the gallery. The whole is executed in selected white oak and has been given the best cabinet



Fig. 4.—The Board Room of Molson's Bank, Montreal,—a beautiful interior in white mahogany.

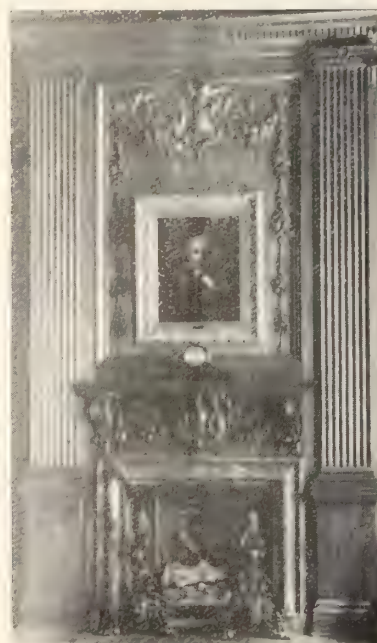


Fig. 5.—Detail of mantelpiece in the Molson's Board Room.

finish. The second illustration, Fig. 2, is a detail of the pilasters under the gallery in the Commons Chamber, Ottawa, this being also, of course, executed in quartered white oak.

A particularly attractive staircase, shown in Fig. 3, serves to illustrate the pre-eminent place of skilled handicraft in the home beautiful. The work is to be found at the home of Col. Herbert Molson, of Montreal. It is executed in quartered white oak. The detail and workmanship of the carving are noteworthy in this example.

The Board Room of Molson's Bank, illustrated in Figs. 4 and 5, furnishes an example of the possibilities of high-grade woodwork in a different field. Here a beautiful interior of substantial appearance is effectively obtained in white mahogany. The mantel-piece, a detail of which is shown in Fig. 5, is considered a particularly successful piece of handicraft. In the actual work one is impressed by the harmonious blending of materials, the mahogany woodwork and the delicate shades of green marble affording a pleasing contrast.

Save from \$200 to \$300 in Building a Home

The Use of Modern Closet Equipment Allows Smaller House Dimensions Without Sacrificing Facilities for Storage of Clothes

Methods of saving space in homes, apartments or other inhabitable buildings without sacrificing the comforts and conveniences mean the saving of dollars to home builders. Space-saving beds solved one phase of the problem of reducing the cost of building. Cutting the size of the closets without reducing their capacities is another method by which the home builder can profit.

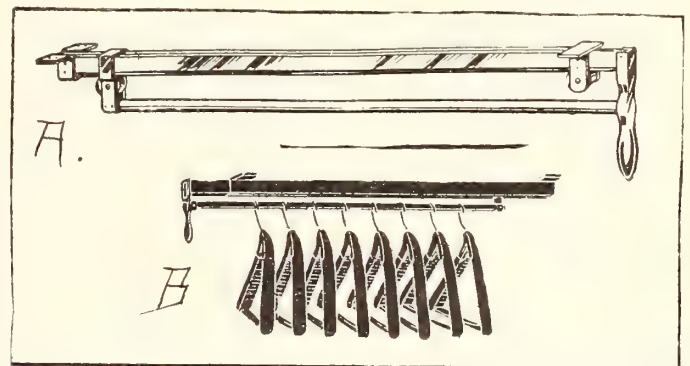
One of the features of the home that the women members of the family are exceptionally particular about is the closets. Closets to women are more important even than a big, airy living room to a man. For it is in the closets that women store their clothes, as well as those of other members of the family. Plenty of closets are what they want, and are usually what they get before they put their final o.k. on the home design.

An inventive genius has designed closet and wardrobe equipment that now gives the home owner and housekeeper closets that are considerably smaller than the old-fashioned kind and at the same time will accommodate as many garments and keep them in better condition. And by using this equipment in the closets several feet of space can be lopped off the size of the building, which means a saving of from \$200 to \$300 in its cost.

The accompanying floor plans show a home in which this idea has been worked out. The plan at the bottom of the first column shows how the ordinary sort of closets are designed, and the space they require to give the family plenty of clothes storage room. The plan at the bottom of the second column shows the same interior, except that the closets are dimensioned to take the modern closet equipment. It will be noted that the modern closet permits a reduction of seven feet from the length of the building, and,

at the same time, when properly equipped these closets will take care of as many garments and keep in much better condition than the old-fashioned kind.

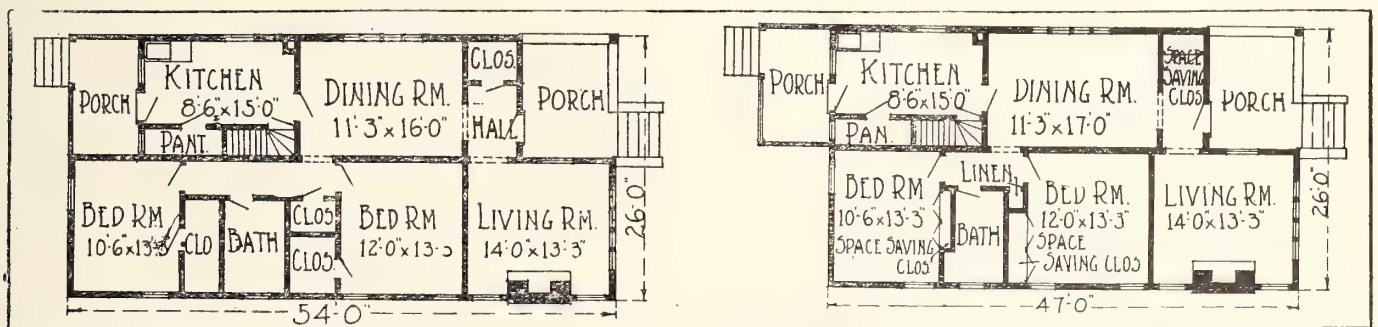
The other drawings show the equipment and the hangers that are attached to it. The clothes are placed on the hangers and the carrier is moved with a slight pressure, bringing the garments out of the closet or putting them away. Instead of reaching into a dark closet and taking the garments from hooks arranged along the walls, the clothes are brought out



Carrier on which clothes are hung. It slides forward carrying hangers clear of closet.

into the light. It is as though the closet was turned inside out and all its contents brought to view.

Space saving is dollar saving. But while dollars have been saved there is no loss in the efficiency of the home; in fact, there is an increase, when the closets are properly supplied with modern equipment, such as that shown. Sliding rack could be made of hardwood by any carpenter if suitable equipment is not to be had.



Floor plans showing space that is wasted by large closets and how careful planning and use of modern equipment reduced length of house seven feet, saving several hundred dollars.

Do You Appreciate Advantages of Plain Trim?

Revival of Building Offers Opportunity for Standardized Designs—More Cutting Should be Done in Shop—Greater Production and Efficiency Needed

By W. H. Shaw.

Never before in the history of this country has the building outlook been so bright. Recent government investigations show that over 20,000 homes are needed at once, simply to allow building to catch up with our ever increasing population. Within the next twelve months we must make up for the halting of all but essential construction during the war and at the same time provide for the normal development of building during the coming year.

The cost of building material depends upon the cost of raw material, production and transportation. The cost of production is the largest item, and it in turn depends largely on the cost of labor. Wages are not going down. Yet even at present prices, building material, in terms of wages, wheat, or profits, is low.

Standardizing Millwork for the Home

The writer several months ago took up the question of Standard Trim, to be supplied to the contractor, practically ready for the finishers with a minimum of preparatory work when it reaches the job. Mr. Millman have you ever talked this over with your contractor customers, and tried to arrange to co-operate with them so that you can both benefit by the accruing savings in labor and reduction in cost? Standardized material will save time and labor on the job and should show at least 10 per cent. more profit on every labor contract. It will enable the contractor to build more homes every year, as it will save him from 6 to 10 days' time on every home he builds.

The trim is shipped cut to length, sanded at the factory by belt or drum sanders if desired, fitting only being required on the job. Think of the waste in material this saves, and it helps to make certain that the workman will get the right pieces in the right place.

Individual Details Prove Costly

Up to the present the great drawback to home building has been the excessive cost of the individually-built house method. Detail mouldings, casing, base, etc., have been costly. The cost of the lumber has been light to begin with. The amount of labor to cut and trim and finish has been a serious question, and in many cases mean endless worries—delay—extra costs, details which looked good on paper, have not worked out well. Millmen have been known to be careless about the quality of the material and the work on the job. What will avoid the usual waste, delays, disappointments, and what will cut the cost of building a home, and what will assure the millman and contractor a sure profit? Science says—"simplicity"—"standardize"—"eliminate waste."

Divide Cost of Planning among Many

This is the day of brains that plans for thousands at a time, instead of one. Why is it necessary to plan and detail every individual home that is built? There is a wiser, more economical way. Once the designs have been tried and proven true, use them many times over, let hundreds of people divide the cost—let hundreds of people reap the benefits of these designs. "This is a day of machinery, the day of producing in tremendous quantities, thereby accomplishing in

minutes that which would consume hours, days and weeks to achieve by usual methods. After working out designs and sizes to the highest point of economy, why not cut the material by labor-saving machines instead of the old hand method, thereby reducing labor and waste to a minimum?

There is at the present time a serious shortage in millwork. Information from authoritative sources is to the effect that many manufacturers are as much as four months behind in their orders. The causes of this condition, the manufacturers say, are the enormous demand and not sufficient labor to turn out the work.

Standardized Millwork Shop Profitable

This subject of equipping and operating a shop on standardized millwork is one that every millman should seriously consider. There will be the usual lull in building this winter and there should be little difficulty in manufacturing this class of material during this slack period. All millmen are or should be in touch with local building conditions, and can gauge pretty accurately what the demand for millwork will be during the coming season. By making a survey of the conditions and the future possibilities it is not a difficult matter to determine whether it is good business to launch out into this class of work.

There are many lumber dealers who operate small millwork shops in connection with their yards; there are also many contractors who have shops equipped to turn out millwork, and who at odd times make up the necessary material required to keep their jobs going. Not a large investment is required to enable a contractor or a millman to manufacture stock frames, inside door frames, stock door and window casings, all assembled, or properly sorted to make easy shipment, as required for all buildings to be erected in his locality. The rough lumber and short pieces are usually in stock and can be easily worked up into the much more valuable machined product.

Competition not to be Feared

The old bogie of competition which many millmen and contractors may fear when considering the question of equipping and operating the shop on this class of work, should have no terrors under the present conditions. Manufacturers of millwork in quantities have all the business they can take care of, and are not in a position to be keen competitors of the smaller shops. In fact they will welcome the small millwork factories as aids in supplying the present demand. Everyone wants to see the building boom continue, and it can only continue by increasing the supply of millwork. The fact remains that the supply must be increased if the building industry is to keep up with the building demands of the country.

Attractive Trim for Moderate Homes

Among the cheaper class of house that is being erected to-day to supply the workman in practically every town and city nothing could be more economical and simple than the trim designs as shown on sheet No. 1. This particular style of trim is used very extensively by many contractors on house work

ranging from four roomed homes to eight and nine roomed homes, and small reasonable priced apartments. It is familiarly known as "Buffalo Trim."

In settling on any particular design of standardized trim, every millman will lay himself open to certain arguments, that such and such would have greatly improved this or that, but the present age seems to demand simplicity and from a sanitary standpoint as many smooth surfaces as possible seems preferable. Any one in the business knows that all straight cutting knives in the moulders are more readily kept in shape than knives cutting beads, quirks, og's, etc.

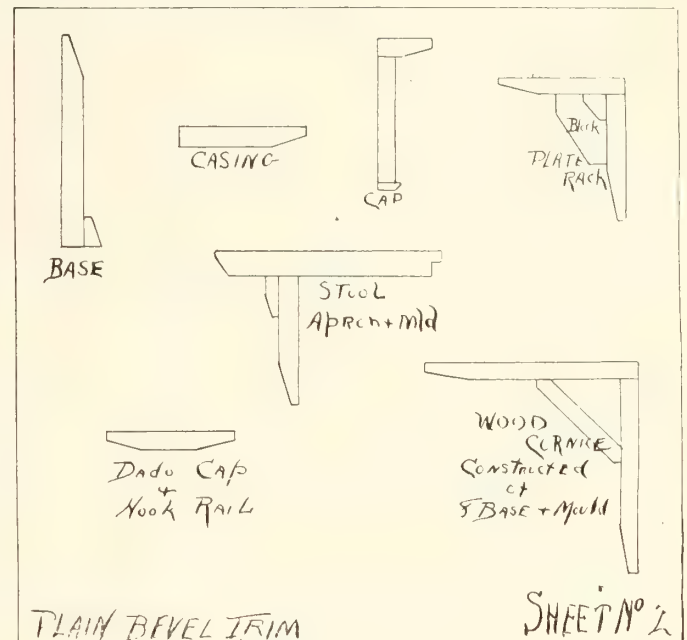
Nothing has struck me as showing this simplicity more than in inspecting the trim in the home of a young architect. I found that he had used the same design for all the trim and wood work in his home.

Enables Stock to be Cut in Shop

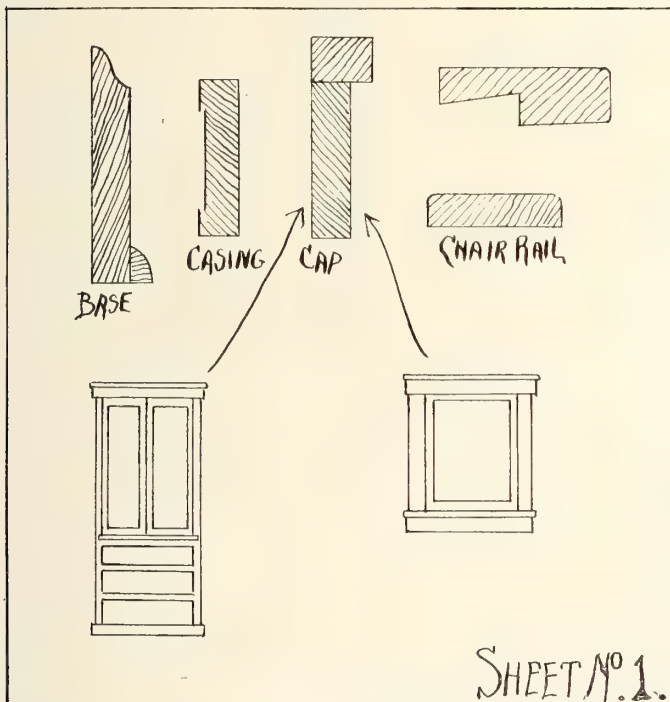
In this particular design if stock door sizes and window frames have been used, caps can be all assembled, casing cut, stools and aprons finished and cleaned up in shop. Not a mitre to cut as all can be returned on themselves, and all with practically one set up on the sticker.

Another argument in favor of stock trim is that when the millman receives the order for frames, etc., in quoting frames, doors, sash, trim, complete, he knows he is supplying the whole job. That helps put a stop to the everlasting peddling of lists from one millman to another. It also allows him to keep his shop running smoothly on orders. He knows the

of time taken in its performance. But men who understand the basic principles of their trade and can readily solve the difficulties as they are encountered in their daily work. Foremen, superintendents and leaders in their trade are men that know how to do



Details of plain bevel trim.



Attractive form of plain trim known as "Buffalo Trim."

work that is ahead of him and can plan accordingly and consequently every order will not be a rush order.

Strive for 100 per cent. Efficiency

Be true to your business and your business will be true to you. No truer saying has ever been uttered, and yet so many men fail to appreciate this fact. Employers are always on the watch for a man who does a better job than has been customary, not merely a more skillful, mechanical job regardless of the length

a job better than the men that actually do the work. Mr. Millman are you on the lookout too for methods and means that will help you meet the present demands? We must either go back or go ahead. We cannot stand still. Check yourself up on your knowledge of your own trade.

Now is the time for an awakening of an ambition for self improvement. How many more hours can you work your machines, or how many more machines can you work? Also how much of that expensive lumber that is going to the fire hole or being sold as kindling wood can be put to a profitable purpose, and above all what will be your saving on materials where the cutting and machining is all carefully planned?

As a final reminder—the fact remains that the supply must be increased if the building industry is to keep up with the building demands of the country.

Benefit to Country and Industry

We have read with pleasure the Annual Furniture Number of the Canadian Woodworker and wish to congratulate you on the general style and get up of same.

We think that this is a great advance and that this style of work in the publishing line should be extremely beneficial both to the country and the industry concerned.

We also wish to express our appreciation of the way in which our photographs have been reproduced.

Yours sincerely,

The Bromsgrove Guild (Canada) Limited
E. L. Wren, Managing Director.

Tasteful Designs in Bedroom Chairs

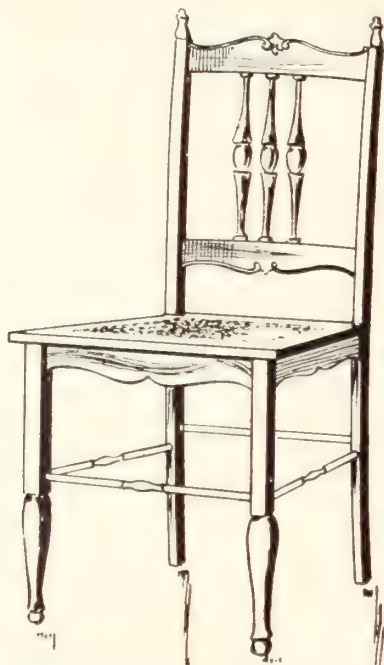
Chairs to Match Designs of Dressers and Beds Published in Recent Issues

By W. J. Beattie.

CHAIRS for the bedroom are usually made smaller and lighter than the ordinary ones, so that comfort and strength are not of such prime importance. Their construction is dainty rather than sturdy. The August issue of the "Canadian Woodworker" contained the designs of a number of attractive wooden beds. This was followed

cane or pad. The back legs are sawn and shaped, and the top of the legs sawn and a small overlay carving attached. The back above the slat is made of reinforced stock glued together in a form of the correct shape and then band-sawed to pattern. If veneer with a very fine figure were selected for the face of this back, a rather attractive chair should result.

An entirely different design is shown in the fifth sketch. The front legs are square, sweep taper feet with bored-out cove above. Square stretchers are used and the seat may be either cane or pad. The back legs are sawn and shaped and have small turned ornaments pinned on the top. The back has the same shaped bow as the rest of the chair. In making the top slat, the overlays are planted on before the band-sawing is done and the small turnings placed as shown. This design should prove very attractive if made in plain oak.



Plain bedroom chair with cane or pad seat.

by an article in the October number, describing and illustrating dressers to match, while this article describes suitable chairs.

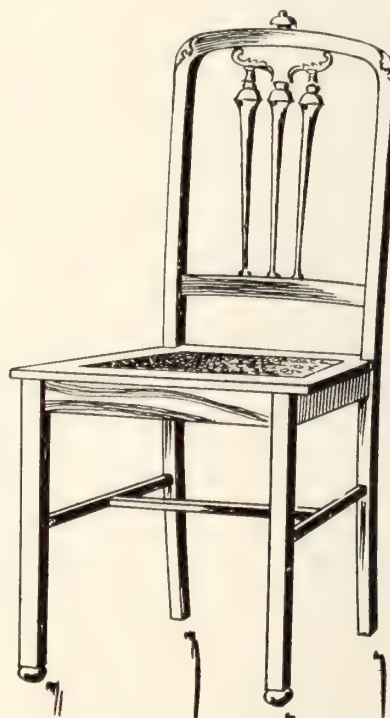
In the first illustration the front legs have turned feet and the stretchers are turned also. The rails under the seat are band-sawed. The seat may be made of woven cane or with a thin pad. The back legs are band-sawed and shaped, the tops being pinned on. The two slats in the back are slightly bowed. The overlay ornaments, being very thin, easily conform to this sweep. The turnings in the back do not need any comment. Would suggest either walnut or gum as suitable woods.

The second chair is very similar in construction. The front legs have turned ball feet. Stretchers square and the seat either cane or pad. The back legs are sawn and shaped and the top ends mitred to receive the top slat. A small carved overlay is placed over the mitred corner to cover the joint. The turned ornament on the top is optional and may be left off if desired, but appears both on the bed and dresser. There is a slight bow to the slats. The small drop bannister that receives the top of the turnings is made to conform to the curve of the top slat and has two light overlay carvings attached. The two outside turnings are slightly longer than the centre one, as indicated in the sketch.

The fourth chair would cost more to manufacture than any of the foregoing. The front legs are band-sawed two ways. Stretchers square and the seat either

Stratford Workers Select Civic Slate

The organized furniture workers of Stratford, Ontario, are taking an interest in civic affairs. They have selected the following of their numbers as can-

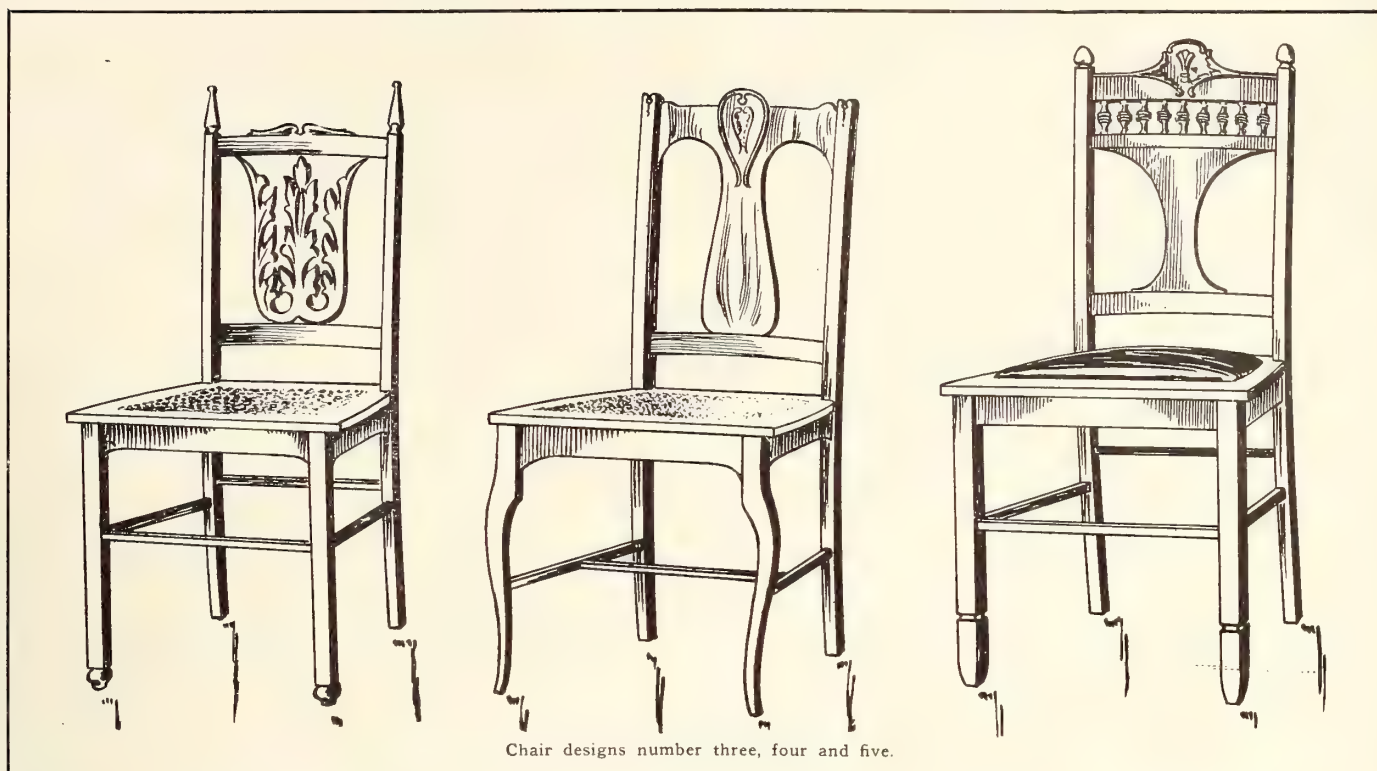


Top ends of back legs mitred to receive back slat.

didates for the coming municipal elections and have asked the Trades and Labor Council to endorse their slate.

Those picked for civic honors are: for Mayor, S. L. Ireland; for Aldermen, T. L. Clancy, F. Wright, J. Amsbury, J. I. Cousens, Geo. Sloat, J. H. Doherty, W. McCullough, W. Hudson, J. Leonard, H. Clark, S. H. Vanstone, B. Parker, and J. Boyd.

School Trustees, J. Boyd and J. T. Cousens. Public Utility Commissioners, T. L. Clancy, J. Dennison, C. Wilson, S. Rossiter, F. Willis, E. Hill.



Chair designs number three, four and five.

How the Massey-Harris Co. Dry Lumber

It is doubtful if there are many manufacturers in Canada who work up a larger quantity of lumber than the Massey-Harris Co. of Toronto. At present, though not running to capacity, they are using from forty to fifty thousand feet a day and under normal conditions the amount consumed daily is in the neighborhood of eighty thousand feet. In view of these figures, the stock of twenty-seven million feet that is piled in their lumber yards does not seem out of proportion. When viewed in the piles, however, one wonders how they find a market for all that material. The lumber, which consists of maple, birch, oak, elm, pine, fir, spruce, hickory and other woods, is all carefully piled in the yard and well air dried before being worked up. But, as their requirements call for a certain proportion of dry stock, a dry kiln is an absolute necessity.

Modern Dry Kiln Installed

The kiln used at present is a six-compartment Grand Rapids vapor kiln, and it is doing exceptionally good work, the stock coming out straight and free from checks. Melvin Virtue, the foreman of the wood-working department, has full charge of the drying operations and gives every detail his personal attention. He has been handling lumber for the last twenty-eight years and has made a special study of timber and its drying. The uniform success achieved in the drying of the various woods is due, in no small degree, to Mr. Virtue's skillful operation of the kilns.

The compartments hold from twenty to twenty-five thousand feet and as a room is filled the live steam is turned on and the stock thoroughly steamed. This process is not hurried, only a small amount of steam being admitted. The number of hours that the lumber is steamed is varied according to the thickness and condition of the stock. It runs from forty-eight to one hundred and forty-four hours, the latter for three and four inch stock that is badly soured and mildewed.

A temperature of about 130° is carried during steaming process and as the live steam will bring the kiln up to this degree of heat, the coils are turned off until the steaming is complete. The idea is to keep the temperature at about 130° and the atmosphere at the dew point until the steaming is finished.

Moisture Admitted all the Time

The humidity is now gradually lowered. This can be done by decreasing the amount of steam admitted or by increasing the temperature of the kiln. In the case of such woods as maple, birch, pine, etc., after the first few days the temperature is gradually raised until a heat of 150°-155° is reached and the drying is completed at that temperature. In either case the adjustments are made daily and are such that the humidity is lowered four or five points every twenty-four hours, but at no time during the drying operation is the live steam shut off completely.

When oak is being dried the initial temperature of 130° is carried all through the drying period. The humidity is lowered by lessening the amount of steam admitted and by controlling the inspirators and the circulation, using this method 4/4 and 6/4 oak can be successfully dried, without case hardening, honey-combing or checking in from twenty to twenty-two days.

The drying periods vary for the different woods. 4/4 birch and maple can be run through in eight to ten days, 6/4 and 8/4 about twelve days, 12/4 and 16/4 in from twenty-two to twenty-six days. Yellow pine seems one of the slowest woods to dry, 12/4 and 16/4 stock requiring in the neighborhood of six weeks of heat. Oak varies from twenty to thirty days, depending on the thickness of the stock.

Check on Rate of Drying

The material in process of drying is tested every few days and a careful check kept on the rate of dry-

ing. The kilns are equipped with recording thermometers and in this way the treatment given each run of stock is definitely known.

When the lumber is dry it is run into the dry storage, where it is allowed to cool very gradually. Should the dry storage happen to be filled, the heat is turned off the compartment and the stock cooled in the kiln for twenty-four hours being removed.

Mr. Virtue suggested that two of the main reasons why some kiln operators have trouble with warped and checked lumber is that they do not admit a cer-

tain amount of live steam at all stages of drying, and that they remove the cars from the hot kiln and subject them to sudden changes of temperature. Stock that is nice and straight in the kiln will often buckle and check if moved from the hot kiln into the cold air or if worked up as soon as taken from the kiln.

Judging from the condition of the lumber in the warming room and factory Mr. Virtue's methods must be about right. The stock included all thicknesses and many different species of wood and was as straight and free from checks as when first placed in the kiln.

Factory Methods for Smaller Manufacturers

Elaborate System Not Required—Foreman to Make Out Stock Bills and Keep Track of Work—Cost Clerk Sees that Time is Properly Charged

By Superintendent

For the successful operation of large furniture factories and other woodworking plants it is an absolute necessity that a very complete system, from the office to shipping room, be employed. This may entail the employment of additional help, but if neglected will result in confusion, loss of time, and, in some instances, loss of material.

In the moderate sized plants, which in all probability outnumber the larger ones, an elaborate system is not so essential. Take as an example a furniture factory employing from fifty to one hundred hands. A system is undoubtedly needed, yet it requires a system and method all its own, one that may be operated without much red tape and additional expense.

Stock Bills Made Out

Where a simple system is in use, the foreman of the machine room, the most important department in the factory, may make out stock bills or bill boards, giving the finished dimensions and particulars of all the parts of each article in the line produced. When completed, these boards should be varnished to preserve the figures and other details, otherwise they would probably be obliterated before they had been used very long. For the first one or two lots to be made up a stock tag for each item should be made out from the bill board, giving rough and finished sizes and other details. These tags should be given to the breaking-out man and by him should be attached the different lots of material as they are cut out, and should follow the stock through the different operations until it reaches the bench.

As soon as the goods become a stock article and the men have worked up several lots, the tags may be done away with and the stock bill given to the stock cutters with an order for 100, 500 or 1,000 of the articles in question. The men soon know each lot of material and the way it should be milled, and are able to carry on without instructions. If any changes have been made in the size or shape of any item, a tag should be attached, showing the changes or the foreman can keep an eye on the work and instruct the men accordingly.

Tags Often Misplaced

We find that when stock goods are being turned out regularly and are tagged, perhaps one article requires as many as thirty tags; these tags often become attached to the wrong lot of material or left be-

hind on an empty truck, so that it keeps the foreman as busy straightening things out as it would if he were to keep in touch with the work and instruct the men; in fact he is forced to keep in close touch with the work and the men to see that it is properly done. If he does not do this mistakes are sure to be made and the material not milled right.

Needless to say, all new work and special lines must be tagged and extra care taken by both the foreman and the men. Each tag should have the number of the case or other item, and a strong string or wire attached, sufficiently long to go around one piece of the work. This number will be found handy for cost keeping as it will identify the goods and enable the time to be charged to the proper article.

A cost-keeping system for a factory employing up to one hundred hands, need be neither elaborate or complicated. It is not a difficult matter to estimate the cost of the lumber, glue, sandpaper, hardware, finishing material, etc., used for any article, but the keeping track of the time employed is another matter. The time is more difficult to keep track of, but may be accurately accounted for if gone about in the right manner.

Keep Careful Check on Time

It will not do to depend on the men to keep their own time, for they do not, as a rule, get it down correctly even when a simple, convenient time sheet is used. Some of them will wait until the closing hour to set down their time for the day's work, and trust to memory to charge the right amount to each job. Time kept in this way is almost as bad as not keeping any, for it is very misleading. If a man works on ten or twelve jobs in a day, it is difficult, to say the least, for him to remember the exact time he gave to each of the dozen orders. In addition there are always some men who can barely read and write, and such men must have their time kept for them.

The most satisfactory way is to have a cost clerk on the job, one who is familiar with the work and who will keep an eye on the men who need it and see that their time is correctly entered. After the cost has been kept on two or three lots of any one article, it is not necessary to keep it any longer. The total time on the last lot may be compared with the previous ones to see that there is not any big discrepancy. If they compare favorably one may rest assured that he is right as to costs.

Manufacturing Furniture Since 1886

Up-to-date Plant at Chesley Producing Many Lines—Modern Veneer Department
Being Added—Conduct Maple Sugar Operations in Timber Limits in Spring

One wonders if when the Krug Brothers commenced the manufacture of furniture in a small way, in 1886, they foresaw the large proportions that their embryo business would assume. From a small beginning in a little frame factory to an immense plant taxing the capacity of a large three-storey building containing 125,000 square feet of floor space would require a fertile imagination to picture. Yet that has actually taken place.

The building is in the form of a large "L" with a total length of 700 feet. The stock enters at one end and works its way through the various departments to the warehouse space in the other end of the build-

ing. A small addition has been added to this end and a planer, swing cut-off and rip saws installed. These machines work up the crating material for packing the furniture.

STOCK TAG

The KRUG BROS. CO., Limited				
CHECK SIZES WITH BILL BEFORE WORKING STOCK				
Job No.	254	Article	Diffuser	Cat. No. 1660 Quantity 50
No. of Pieces	50			
Description	Strip for Chest Bottom			
Finished Length	36 1/8	Width	15 1/2	Thickness 1/4
Rough	" 27	"	15 5/8	" 5/16
Index No.	12	Kind of Wood	Veneer	Grade G
Ripped by	Buzz Faced by			
Method employed to keep track of work in Krug Bros. plant				

ing. A small addition has been added to this end and a planer, swing cut-off and rip saws installed. These machines work up the crating material for packing the furniture.

A large quantity of lumber is always on hand in the yard. The fancy woods, such as oak, walnut, etc., are all imported, while the remainder of the stock is cut at the company's sawmill. Krug Brothers own large timber limits consisting of maple, birch, ash and other woods.

The stock is all thoroughly dried before entering the factory. The dry kiln consists of a battery of five Grand Rapids compartment kilns. The lumber is subjected to a thorough steaming and the humidity and temperature are regulated according to the latest scientific methods. The cars of lumber are run from the kiln to the breaking-out room, where it is cut up by two swing cut-off saws, three C. M. C. power feed rip saws and a Fay & Egan power feed band saw.

In the machine room the stock is first trued up on a large 24" Cowan buzz planer fitted with an automatic feed attachment and from there goes to the various machines. As much of the work as possible is sized and machined on the two stickers, a Yates 108 and a 12" C. M. C. A Linderman machine and a large revolving clamp takes care of the jointed material. In addition to the equipment mentioned a large number of machines are installed, among which are the following: Yates endless bed sander, Mattison automatic forming lathe, 3" band re-saw, double end tenoner, Yates double cut-off saw, a number of combina-

The accompanying illustrations shows the form of tag used to keep track of the material going through the factory. Owing to the wide variety of lines produced, such as dining and bedroom furniture, etc., without an efficient system it would be next to impossible to keep track of the multitude of parts required. A tag is issued for the different parts and follows that particular item from the swing saw to the assembling department. While particulars and sizes are given to prevent variations in finished lengths due to different rules employed by the various workmen, all finished lengths are compared with the rod provided for that particular article. In this way uniformity in measurement is secured.

In the cabinet room three belt sanders and a number of disc sanders are installed, while the finishing room is equipped with three DeVilbiss spraying machines, one for shellac, one for varnish, and one for stain. A fourth spraying machine is being set up to spray the fuming acid on the oak. The idea of using the spraying machine for this operation instead of dipping, as they now do, is to see if the light coat applied by the sprayer will raise the grain as much as dipping does. If it does not a considerable saving will have been affected, for at present a lot of time is consumed sanding the fumed stock after it is removed from the fuming room.

To meet the present demand for high grade furniture, Krug Bros. are fitting up a modern veneering room. The equipment already purchased consists of a Perrin hydraulic press, Perkins glue mixer and spreader and a veneer taping machine. It will be some months before this department is operating, as the intention is to erect a building to house the upholstering department and use the present upholstering room for veneering.

A rather interesting feature of the work in the woods is the gathering of the maple sap each spring. This firm conducts one of the largest maple sugaring operations in Ontario, and next spring expect to tap 15,000 trees. The equipment employed has a daily capacity of fifty gallons of refined maple syrup. Tapping and extracting the sap does not appear to have any retardant effect on the growth of the tree.

The members of Krug Bros. & Co., Limited, are: John, Conrad, Christ, William and Geo. E. Krug, together with H. Ankenman. When this firm commenced operations in 1886 few of the furniture factories that are doing business today were in existence.

"Herewith is cheque for \$1.00, covering my subscription to the Canadian Woodworker. I cannot state how pleased I have been with your magazine, and feel that if every person interested in wood-working would read your paper they would get many times their subscription value."

F. R. Burgess,
Ottawa, Ont.

Casehardened Lumber and Warped Products

Many of the warped and twisted wood parts received for examination by the Forest Products Laboratory at Madison, Wis., are found to be made from casehardened lumber.

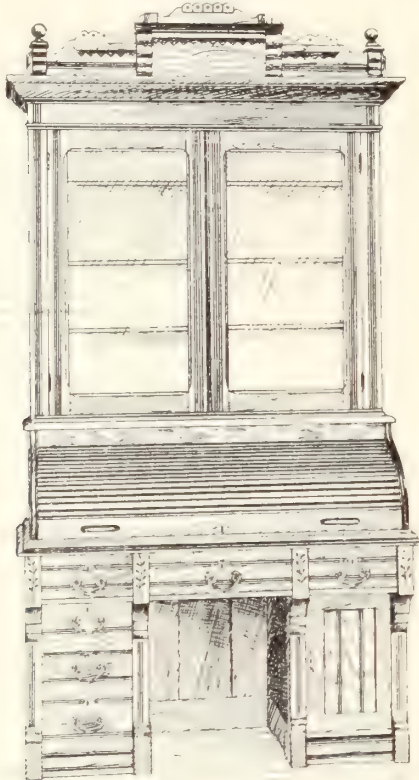
A wooden part manufactured from casehardened lumber is well on its way to the scrap pile. At the time of manufacture the part appears perfect, but later on it shows up twisted and distorted. Casehardened lumber is full of stresses which have set up by faulty drying, and the balance of these stresses is easily des-

tructive of a lot of trouble and excessive manufacturing costs.

Casehardening in lumber can be relieved by proper manipulation in the dry kiln. Kiln operators should learn the meaning of casehardening, its cause, and how it may be detected before the lumber is removed from the kiln.

Uneven Coatings on Wood Cause Warping

Coatings of equal moisture resistance should be applied to all surfaces of a wood product which would give dissatisfaction if it were to warp in service. Tests at the Forest Products Laboratory have shown that even when wood is properly kiln dried no coating entirely prevents it from picking up or giving off moisture, and, consequently, from swelling and shrinking under the influence of varying atmospheric conditions. Varnish, shellac, and other moisture-resistant finishes merely decrease the rate at which the moisture changes in wood occur. The higher the grade



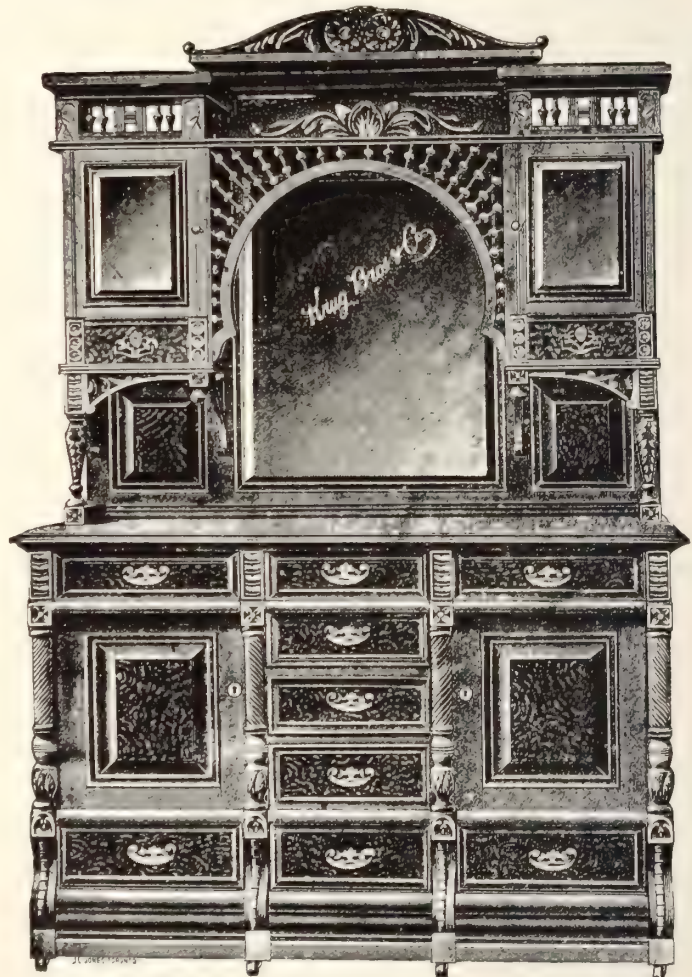
1885—Solid walnut combination desk and bookcase, by Baird Bros., Napanee, Ont. Price \$35.

troyed by any one of several common manufacturing operations.

A casehardened board when resawed, for instance, has such a strong tendency to curl up that mere nails and screws will not hold it flat. If casehardened stock is run through the planing machine and a slightly heavier cut is made from one surface than from the other, warping results.

Saddle chair seats made from casehardened lumber warp because the material was scooped out only from one side. Pulley stock may be so severely casehardened that when a hole is drilled through it, a large crack or split will immediately occur, because the stress set up incident to casehardening is more powerful than the wood surrounding the hole. Patterns for castings, if made from casehardened lumber, are doubly sure to warp and "work" when shaped and subjected to varying moisture conditions.

In the manufacture of wood products, from telephone parts and other delicate and precise equipment to shipping boxes and crates, casehardened wood is



Walnut sideboard made by Krug Bros. & Co., Chesley, Ont., in 1888. Sold for \$45.00.

and the more coats applied, the slower will be the moisture changes.

Unequal coatings on opposite surfaces of a wooden article cause unequal rates of change in moisture content and hence unequal shrinkage on the two sides of the piece. The result is that the wood tends to cup or twist out of shape.

Power Wastage in Furniture Factories

Not Enough Attention Given to Layout of Drive—Workmen do not Understand Theory of Efficient Power Transmission

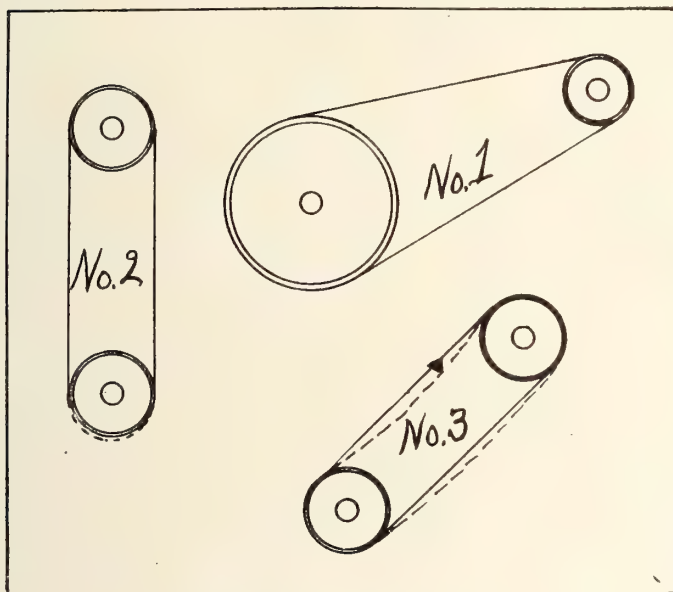
By A. E. Wolfe

A considerable amount of power is wasted each day in many of our furniture factories through belt slippage. Poorly-designed drives and bad mechanical practice are responsible for the greater part of this trouble. Where the slippage is very great, it might be well to study the drive before placing all the blame on the belt.

When a belt slips it shows that its pulling power is not sufficient to carry the load, and to cure this fault it is necessary to increase the grip or pulling power. The pulling power of a belt is governed entirely by the co-efficiency of friction between the belt and the pulley. Shortening the belt will not always effect a cure, for as the belt is made tighter, the bear-

shown in the third sketch, will with the same length of belt transmit a greater amount of power and there will be less wear on the belt.

Many workmen find it difficult to understand why a belt at an angle will transmit more power than a belt running up and down. By referring to the third sketch, it will be noticed that with a slack belt running at an angle, an increase of tension on the driving side reduces the tension on the slack side, when the lower side is the driving or tight side. In this case the slack side has a tendency to cling to or, as it were, wrap around a greater portion of the lower pulley. When the upper side is tight, the lower portion drops down and the contact between the belt and the lower pulley is practically the same. With the same initial tension a belt running at an angle is capable of transmitting more power than when running vertically.



Illustrating faults of different drives.

ing friction is increased with a corresponding increase in load.

Referring to poorly-designed drives, figure 1 shows a short hook-up. More or less trouble is experienced when this drive is used. To deliver the required power the belt must be kept very tight, and, as stated, as you tighten the belt you increase the load carried. In addition to the increased load, where a tight belt is used there is more or less trouble with over-heated bearings.

Vertical Drive Not Efficient

Another type of drive which is found in many factories is shown in the second sketch. This is known as a vertical drive. When the belt is placed over the pulleys, both sides may be assumed to have the same tension. While transmitting power the increased tension causes the belt to give or stretch on the driving or tight side, with the result that there is less tension on the slack side. This tends to allow the belt to drop away from the lower pulley and decreases the friction between the belt and the pulley, thus lowering the amount of power transmitted. A drive designed at an angle of forty-five degrees or greater, as

Not Enough Attention to Power Transmission

The transmission of power is a subject that should receive more attention from the man in the shop. If the belt slips their first thought is to lay the blame on the belt and try to remedy the trouble by applying a liberal dose of belt dressing. Where this is followed it will be found that in many instances the life of the belt is shortened and it is soon ready for the junk heap. Do not infer from this that belt dressing should not be used, but before it is applied, the workman should see that the belt is clean and free from dust and a very small amount of dressing applied. This tends to increase the friction between the belt and pulley.

In many machine departments where the belts have given a good deal of trouble, one notices where attempts have been made to remedy matters by placing idlers on the various drives. In most instances this idler was an after consideration. Had the drive been properly designed in the first place, the idler would not have been necessary.

More attention should be given to the length of the drive. When installing new machines it is better to, within reason, run as long a belt as practical and to run it at a nice easy angle. Where this is done increased efficiency will follow, this will be more noticeable at high speeds. Comparing two lay-outs, one running a 15 ft. belt and the other a 30 ft. one, it is easy to see that the shorter belt will have to travel over the pulley a greater number of times per day than the longer one. My experience has shown that there is a great deal less wear on a long belt and a gain in power as compared with a shorter drive.

Cheap Belts Not Satisfactory

When hooking up a long-angle drive it is absolutely necessary to instal a high-quality belt, one with the same grade of leather throughout. Some of the cheaper grades contain flanks and other low-grade leathers, and in consequence stretch and give a lot of trouble.

In many instances it will be noticed that some workmen have a habit of cementing the splice before

placing the belt over the pulleys, and when this is done it is often found that the belt is somewhat short and will have to be put on by force. This is a very bad practice. Often when this has been done it will be found that the belt does not run in line over the pulleys. The reason for this is that in putting on the tight belt one edge became stretched more than the other, with the result that it will not run true. Had it been spliced properly this would not have occurred. This fault will be more noticeable in a wide belting.

The proper way would have been to have placed the belt over the pulleys and brought the ends together by means of a belt clamp. I make a practice of using a clamp on all belts and it certainly should be used on all belts 6 in. and over. Another feature is that a belt stretched at one edge will not transmit the same amount of power because the friction is decreased at the loose edge, thus the entire width of the belt is not in close contact with the pulley.

A belt should never be put on with the drive pulley running at high speed. It stands to reason that a pulley running at high speed and a machine at load or at a standstill will put an increased strain on the belt that will cause slipping, stretch and wear. In addition the man himself runs the risk of being seriously injured. It is likely, however, that as long as belts are used that this practice will be continued.

Cross Demand Failed in This Action

In the case of Mason, Gordon and Co., vs. W. H. Pauze and contra, Gordon & Co. sued the principal defendant for \$240, due on two promissory notes. This claim was not contested, but defendants made a counter-claim against the firm for \$2,057 damages for default of delivery of two carloads of fir doors ordered by Pauze.

Justice MacLennan, of Montreal, gave judgment for the plaintiffs, Gordon & Co., for \$240, with interest from September 17th last, on the principal action, together with costs; but dismissed the counter-claim by Pauze against Mason, Gordon & Co.

"The cross-plaintiff," said the judge, "has never tendered the price of the doors to the cross-defendants, and until he filed his cross-demand in the present action he made no demand for their delivery or for damages after the cross-defendants had notified him that the order was cancelled, and that the goods would not be shipped.

"The cross-plaintiff does not allege or prove that he purchased any goods in the open market to take the place of those which he had ordered from the cross-defendants in February, 1917.

"The damage to which a purchaser is entitled for non-delivery of goods is not the profits which he has lost, but the difference between the contract price and the market price of similar goods in the open market at the date of the breach or failure to deliver, and it is his duty to go into the market and supply himself with other goods similar to those which he had bought if he intends to hold the vendor liable in damages for failure to deliver the goods purchased.

"The cross-plaintiff by his silence from the date of notification of cancellation of the contract for a period of over eleven months, and until he was sued by the principal plaintiffs on a balance of an indebtedness which was due by him before the cancellation, acquiesced in the cancellation of the order given by him on February 28th, 1917.

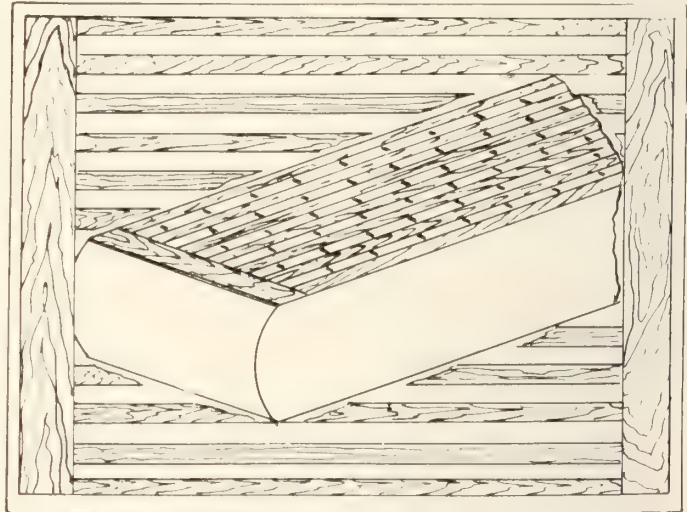
"In the circumstances the court holds the cross-

plaintiff has not proved the material allegations of his cross-demand, which is accordingly dismissed with cost."

Frame for Top of Herzog Jointers

By D. L. W.

When truing up stock on a Herzog Automatic Jointer, some of the work may not clean up at the first time through, necessitating a second cut. To facilitate the passing of this stock back to the operator, we tried placing it on top of the feed drum so that it would be carried back automatically. Using



Design of rack to fit top of Herzog jointer.

this method we found that some of the shorter pieces tipped up and became caught in the feed spikes. We overcame this by making a wooden grating, as shown in the accompanying sketch, to fit the top of the feed drum. The slats drop between the rows of feed dogs or spikes and were of a thickness that allows the dogs to project through about a quarter of an inch. With this grating in place we can put all sizes of stock on top, knowing that it will be carried back without any risk of being caught.

Judging the Efficiency of a Plant

Hugh M. Wharton in "Industrial Management" says in part:—"The fitness of any general plan for an industrial plant can be measured by the degree in which the following five essential requirements are fulfilled:

1. Proper accommodation for the machines that are to be installed.
2. Provision for handling and transporting material at a minimum cost.
3. Provision for extending the plant without serious disturbance of the established manufacturing routes.
4. Arrangement for reasonable sub-division to prevent the spread of fire.
5. Proper accommodation for the workers."

A belt has more contact on a large pulley than a small one; hence it can be run slacker and so lessen the friction on the bearings and the strain on the belt. have been closed with a number of firms manufacturing office desks and equipment.

Checking the Shape of Resaw Teeth

Up-to-date Equipment Necessary for the Successful Fitting of Resaw Blades—
Faults Commonly Found on Hand Fitted Saws.

By Edgar Usher

The three outstanding points to consider in the successful operating and fitting of band resaws are: correct and uniform tension, proper adjustment of strain and symmetrical teeth—teeth with sufficient gullet capacity to care for all the sawdust. The first two essentials have already been dealt with in previous articles and in this number we will study the question of properly sharpened teeth. The shape of the tooth is often neglected by many filers, much to the detriment of the product and of their own peace of mind.

In order to emphasize the different requirements it would probably be as well to illustrate some of the faults that are to be found in a good many mills. Sketch No. 1 shows a tooth which clearly denotes carelessness and laziness on the part of the filer. Instead of going to the trouble of putting his saw on the grinder and keeping the teeth in proper shape, this filer preferred to file the back and face of the tooth. The dotted line shows the tooth as it originally came from

saws. In band resaws this fault is greatly aggravated by the delicacy of the saw blade and the nature of the work that it is required to perform. While it is possible to get a saw to run and to do a fairly good class of work at a moderate speed, a saw which has been filed with square-cornered gullets cannot be expected to stand any extra strain without cracks appearing.

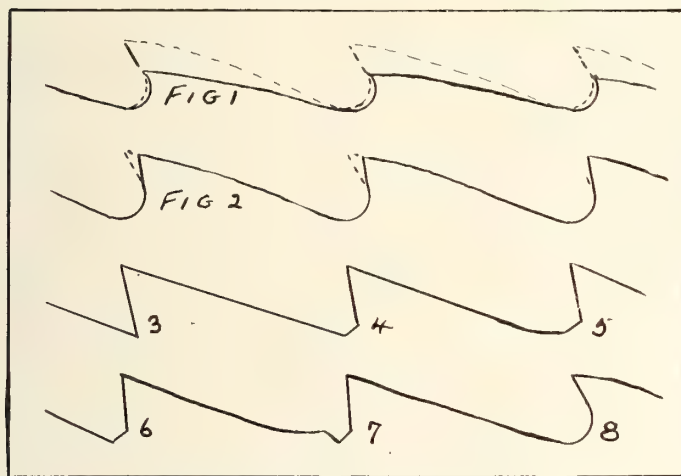
In illustrations 3 to 8 will be seen flagrant violations of this first rule in saw practice. Five different kinds of sharp-cornered gullets are shown, all caused by fitting with a square-cornered or three-cornered file. Any one of these shapes, if carried on a saw, are sufficient to ruin the entire blades. The point shown at No. 3 shows a gullet filed with a three-cornered file and it will be noticed that there is very little hook to this tooth, causing the saw to pound its way through the stock and thereby putting an additional strain on the gullet. Owing to the shape of this tooth the whole of the strain is thrown on the sharp corner in the gullet, and this additional strain will, in most cases, cause the formation of cracks. The fourth sketch shows a similar case but filed with a flat file, leaving two sharp corners in the place of one. This is found more often than No. 3. Five, six and seven show similar instances that are found in many mills, while at eight is shown for contrast the shape of the tooth when it left the factory.

These are, of course, extreme cases and are cited to illustrate the practical impossibility of doing justice to band resaws without proper filing-room equipment, and to secure good results, both as to quality of product and life of the blades, it is essential that this equipment be provided. If this is not done the file has to be resorted to for fitting and the hammer relied upon for tensioning, both these methods are obsolete, as judged by present-day requirements.

Even if it is found necessary to resort to the file and hammer for fitting the saw, it does not follow that it is necessary for the teeth to be allowed to get into the condition shown. The free use of a round or rat-tail file will keep the gullets free from sharp corners and, at the same time the hook may be retained on the tooth.

Another trouble that frequently occurs when a grinder is not used is that the teeth are not kept a uniform height with the result that the high teeth do all the cutting. This feature is one that is almost impossible to overcome when the saws are fitted by hand. The result of running a blade with teeth of an uneven height is to lower the grade of lumber produced and also to increase the liability of cracks occurring, as the high teeth have to do all the cutting, placing an additional strain on the gullet. This unequal distribution of strain also throws the tension out and makes it much more difficult to keep the saw evenly tensioned and in proper running order.

When the building trade does commence its real work it ought to be the most important industry in the country for a time.



Faults commonly found in resaw teeth.

the factory, the dark line showing the shape it has been filed down to.

The second sketch shows another case where the grinder was not used often enough or where excessive use was made of the swage. Some filers are of the opinion that the swage must be used every time the saw comes off the mill. This is not the case. The usual practice is to grind the saws and then carefully examine the points to see that none of them have been knocked off during the last run, and that the points carry enough swage and clearance for another cut. When this is done it will be found that swaging every second or third run will keep the blade in order. After grinding, it is good practice to run over the points with a flat file, back and front, and to put a new edge on the swaged part of the tooth, but if this practice is carried to the extreme a tooth, as shown in the first sketch, will result.

The greatest evil found when saws are fitted by hand is square corners in the gullets. This applies not only to band saws but from the large circular saw down to the small factory circulars and band

Are Your Boxes Adequately Nailed?

Observations of packages which have failed in service and tests on packing boxes by the Forest Products Laboratory, Madison, Wis., have shown that the most common defect in box construction is inadequate nailing. Attempts to strengthen boxes by the use of thicker lumber, without regard for nailing, very often only waste material. The extra wood may not be needed so much as a few more nails.

As an aid in determining whether or not a box is adequately nailed, the laboratory offers the following information:

Woods Grouped According to Nail Holding Qualities

The woods commonly used in box construction may be divided according to nail-holding ability and other properties desirable in box woods, into four groups, as follows:

Group No. 1.—Alpine fir, aspen, balsam fir, basswood, buckeye, butternut, cedar, chestnut, cottonwood, cucumber, cypress, jack pine, lodgepole pine, magnolia, noble fir, Norway pine, redwood, spruce, sugar pine, western yellow pine, white fir, white pine, willow, yellow poplar.

Group 2.—Douglas fir, hemlock, larch (Tamarack), Southern yellow pine, Virginia and Carolina pine.

Group 3.—Black ash, black gum, maple, soft or silver, pumpkin ash, red gum, sycamore, tupelo, white elm.

Group 4.—Beech, birch, hackberry, hickory, maple, hard, oak, rock elm, white ash.

All the species in one group are used interchangeably as regards thickness of material, and size and spacing of nails.

Kind of Nails to Use

Tests have shown that cement coated nails have a holding power from 10 to 30 per cent. greater than that of uncoated nails. Smooth nails are more effective than barbed nails.

The penny of nail to be used in any case is determined by the thickness and species of wood in which the point of the nail is held after driving. The following schedule is based upon standard cement-coated box nails. If the designated penny of nail is not available, use the next penny smaller and space nails proportionately closer.

Schedule of Nail Sizes

Thickness of ends or cleats to which sides, tops and bottoms are nailed

Species of wood

holding nails

$\frac{3}{8}$ " or less—

$\frac{7}{16}$ " $\frac{1}{2}$ " $\frac{9}{16}$ " $\frac{5}{8}$ " $\frac{3}{4}$ " $\frac{13}{16}$ " $\frac{7}{8}$ "

Size of Cement Coated Nails

Group 1.	4d	5d	5d	6d	7d	8d	8d	9d
Group 2.	4d	4d	5d	5d	6d	7d	7d	8d
Group 3.	3d	4d	4d	5d	5d	6d	7d	7d
Group 4.	3d	3d	4d	4d	4d	5d	6d	7d

Spacing of Nails

Space nails holding boards to end grain of end $1\frac{1}{4}$ inches apart and nails holding boards to side grain of end 2 inches apart, when nails are 6 penny or less. Increase spacing of nails $\frac{1}{4}$ inch for each penny over 6. No board should have less than 2 nails at each nail-

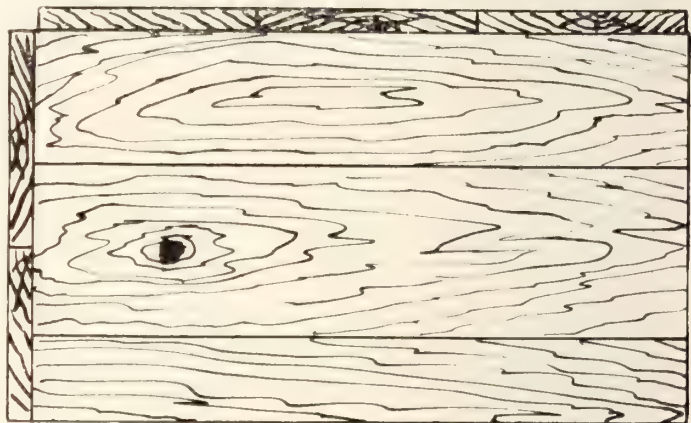
ing end. Space nails holding top and bottom to sides 6 inches or more apart, when nails are 6 penny or less, increasing the spacing 1 inch for each penny over 6.

While such spacing may appear to be too close, as a matter of fact, it calls for only about two-thirds of the number of nails which would cause excessive splitting of the ends, and only about two-thirds of the number required to balance the strength of the nailed joints with the strength of the box in other respects. With the spacing given above, the nailing is still the weakest point of the ordinary box.

Box Corner Designed to Prevent Loosening of Metal Straps

Metal strapping applied to a box made of thin material cannot be fastened by nails driven into the edges of the boards, but must be joined by one of the edges of the various fastening devices and held in place by tension.

When first applied, the strap is very tight and no difficulty is experienced in keeping it on the box, but when the box is stored for a period of several months the shrinkage of the lumber usually reduces the cir-



Specially designed box corner

cumference to such an extent that the strap falls off in transportation.

Such loosening of the straps may be successfully prevented on canned food boxes or, in fact, on any box carrying a commodity which has sufficient strength to resist the strap tension, by building the box in such a manner that neither the top nor bottom laps the sides. The accompanying sketch will make the construction clear. The strap is applied in the usual manner and drawn very snug. The tension of the strap is sufficient to spring the sides, top, and bottom of the box in against the contents, so that the corner boards lap in the centre. As a result, the middle of the box is smaller than the ends, and the straps will not slip off, even though the box shrinks.

Several such boxes were made up at the Forest Products Laboratory, Madison, Wisconsin, of lumber containing 15 to 20 per cent. moisture and, after packing and strapping, these boxes were dried to a moisture content of 9 or 10 per cent., which is about the moisture content they would come to in a heated warehouse. It was found that, even after the boxes had shrunk, the straps could not be removed from

them without cutting away the corners. When the boxes were tested in the revolving drum, the straps showed a tendency to work toward the centre rather than to slip over the ends..

Ship in Wooden Containers

In an effort to work up a larger market for boxes and box shoos—and incidentally lumber—the Southern Pine Association have purchased and distributed a large number of rubber stamps bearing the above inscription. A large number of wooden box manufacturers are distributing these stamps among the merchants and wholesale houses in their districts with the request that they use it on all orders that they place.

This is a trade-boosting idea that might well be employed by the Canadian box manufacturer in increasing the demand for his products. Lumbermen and woodworkers in general might boost their product and help along the good work by insisting that all camp and other supplies must be shipped in wooden containers. Then if the advantages and savings that could be effected through the use of wooden container were clearly pointed out to the merchants and wholesale dealers, a demand would be created that would materially increase the consumption of this commodity.

The box manufacturer is the logical man to inaugurate this movement, and he should be able to count on active assistance from the lumber dealer. While a certain amount of good could be accomplished by individual effort, to reap the fullest benefit from such a movement it should be energetically and aggressively supported by a number of large box manufacturers working in close co-operation. Is it not worth a try?

The Value of the Motor Driven Machine

The original cost of motor driven devices seems to be the primacy obstacle against the installation of the individual motor, at least by some, and the fallacy of this idea is proven to the uninitiated when the subject is weighed and the varying costs and upkeep are noted, says a writer in the "Furniture Worker." As a first consideration, we should bear in mind that to operate a steam driven power plant, there is necessary an engine and boiler plant, where there must be a fireman, and that the same must be operated with intelligence in order to make the conduct of the plant at all satisfactory.

The cost of this alone is considerable. The power for the operation of one machine must be ample, and this will require that the power be sufficient to operate the entire plant. It is just as easy to have the complete plant in operation. The danger, loss of motion, delays due to belt trouble and kindred obstacles are all factors that make the cost of the power plant mode widespread, and in addition thereto, we must figure in much loss of time due to breakdowns that are seemingly unavoidable.

Shafting and pulley troubles are not uncommon in any plant where these are to be seen. Endless delays are seen, and the waste motion is a material factor as in favor of the individual motor drive. For the latter there is no power plant needed. In every town today electric power is obtainable at low rates. This can be connected direct to the individual motor, and the added costs that are to be encountered with steam

driven machines is so materially reduced here as to make a wonderful reduction in cost of operation.

The individual machine can be operated at will, and the cost of same will be only so much used at any given time. The waste power is thus materially conserved, and the amount of lost time, cost and other annoyances, reduced so as to act as wonderful power for economic operation. It is cleaner, safer and far more beneficial. It is a big factor for reducing lost motion, and in this way being made a form of saving that in a short time pays for the cost of installation.

Even the modern plant can be improved with the use of the individual motor. The reduction of overhead is the all-important matter often, and this is one of the most logical helps possible to assist in this way. It can be attached to laths, saws, surfaces, saw benches, sanders and other parts of the equipment and made to serve its purpose with a meaning that is of wonderful help.

Correct Moisture Content of Lumber

Shrinking and swelling of wood, as well as warping and twisting, are caused by changes in moisture content. Such changes always take place when the wood is not in equilibrium with the surrounding atmosphere. This state of equilibrium depends mainly upon the humidity of the air and to some extent upon its temperature.

Knowing the average temperature and humidity of any given region, as given by the Weather Bureau records, it is possible to determine the moisture content of wood corresponding to these conditions. Wood dried to this moisture content will undergo the least possible amount of working in that particular region.

The following table, compiled from data secured by the Forest Products Laboratory of the U. S. Forest Service at Madison, Wis., shows the moisture content in wood corresponding to various temperatures and humidities:

When relative humidity of air is	The moisture content of "dry" wood is		
	At temperature of 70 degs. F.	At temperature of 140 degs. F.	At temperature of 212 degs. F.
%	%	%	%
20	4.5	3.3	2.2
30	6.0	4.5	2.9
40	7.7	5.9	3.9
50	9.3	7.1	4.9
60	11.2	8.8	6.2
70	13.5	10.7	8.0
80	17.0	14.0	10.5
90	22.2	18.2	14.0
100	32.0	26.2	21.0

All wooden products in which swelling, shrinking, warping, checking, and opening of glue joints are troublesome should be manufactured at the moisture content and under atmospheric conditions corresponding to the average for the region in which they are to be used.

Ask the sawyer who will insist on sharpening a saw so the teeth have no rake, why the makers of the chisel tooth saws put such a rake on their saws.

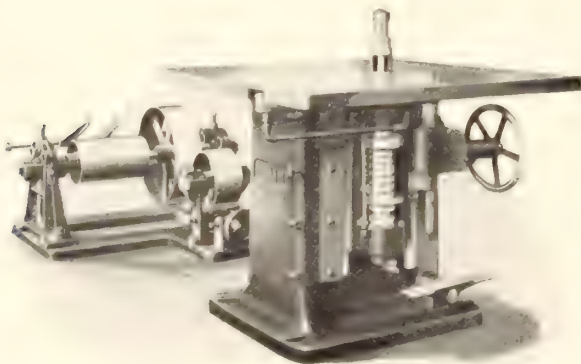
Haven't you one or more employees who ought to have a subscription to a trade paper sent right to their home address?

Machinery & Equipment

C. M. C. High Speed Shaper

The Canada Machinery Corp., Limited, Galt, Ont., have just brought out a new ball bearing single spindle shaper. Practically all the work shaped in the ordinary woodworking plant can be done on a high speed single spindle without reversing the cut or stock. The advantages accruing from the elimination of the second spindle are very apparent.

The table is 40 inches square and is designed so that it will not drum or vibrate. Concentric rings are fitted in the table so that an opening of 7 in., 4 in. or 3 in. may be had as desired. The spindle which runs in dust-proof ball bearings is of large diameter and runs at 7,000 r.p.m. An oil cup is provided to give constant flow of oil. The spindle pulley is taper bored to fit spindle and is forced into place by a finely threaded nut. Doing away with set screws and keys, eliminates danger of springing spindle. Capacity



C M.C. ball bearing shaper.

cutters up to $5\frac{1}{4}$ in. wide. The arbor is massive and accurately bedded in deep V gibs. The vertical adjustment is made by means of large handwheel. A convenient treadle belt shifter is provided.

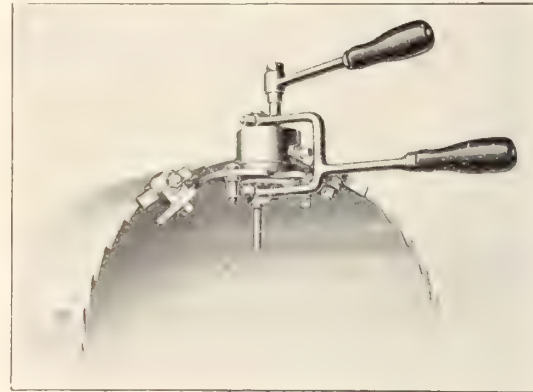
Full particulars may be had upon application to the Canada Machinery Corporation, Galt, Ont.

Pribnow Oval Die Swage

A swage recently placed on the market by the E. C. Atkins & Co., Indianapolis, Ind., is the Pribnow Oval Die Swage. In this tool accurate adjustment and simplicity are combined with strength and durability. The dies are oval with two flat edges and are set slightly above centre in the bushing to give a clearance to the working edge. The dies and bushings are susceptible to even a closer regulation than the solid die. The forked die lever carries a pair of eccentric bushings in which the oval die is mounted and which turn with the die. The bushings come close to the anvil providing a close bearing and grip the die tightly so that the only wear on the die is where it engages the saw tooth. After one end of the eccentric die bushing is worn, the other end can be used, giving each bushing two wearing points.

The maker claims that these swages show a saving of 20 per cent. more steel.

A booklet entitled "Atkins Tools for the Filing



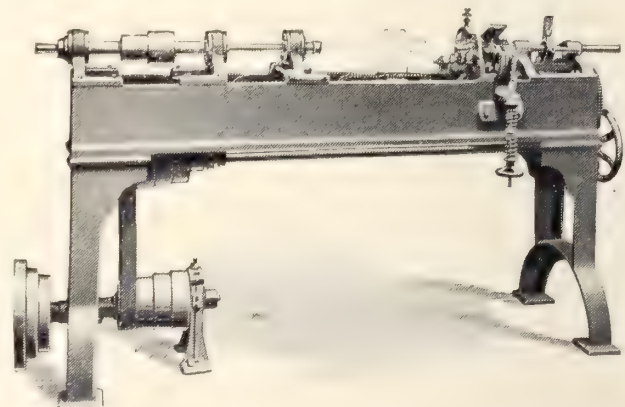
Pribnow swage on circular saw

Room" may be had by applying to the above mentioned firm.

Improved Self-Feeding Turning Lathe

A wood-turning lathe, embodying many new features, has recently been placed on the market by C. W. Smith, M.E., Grand Rapids, Mich. In this machine, which is known as the New No. B-42 self-feeding variety turning-lathe, the main mandrel and sliding carriage run in ball bearings, the mandrel travelling back and forth through the long hollow tube while the driving pulley remains stationary. This feature does away with the long drum that is commonly used and the ball bearings effect a considerable saving in power.

After the work has been turned by the roughing knife, it passes through a ball bearing eye. This ball

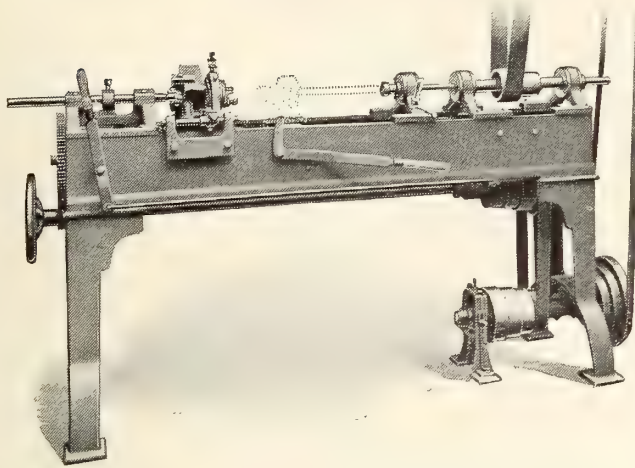


Front view of the new No. B-42 Self-feeding Variety Turning Lathe (Patent Pending)

bearing turns with the work and the friction on the stock at the eye, with its accompanying heating and burning, is thereby eliminated. The ball bearing eye holds the stock firmly without chattering, insuring smooth work. A variable feed is provided and may be set to make from 15 to 70 strokes a minute, de-

pending entirely on the work being produced. The feed adjustment is made by changing the belt on the cone pulleys. The swinging cutter head is designed to move in all directions in addition to its circular movement. This enables the operator to set the knives so as to secure a shearing cut. The cutters are made 7 in. long without slots.

The accompanying illustrations show two views of the B-42. It will be noted that the man in charge



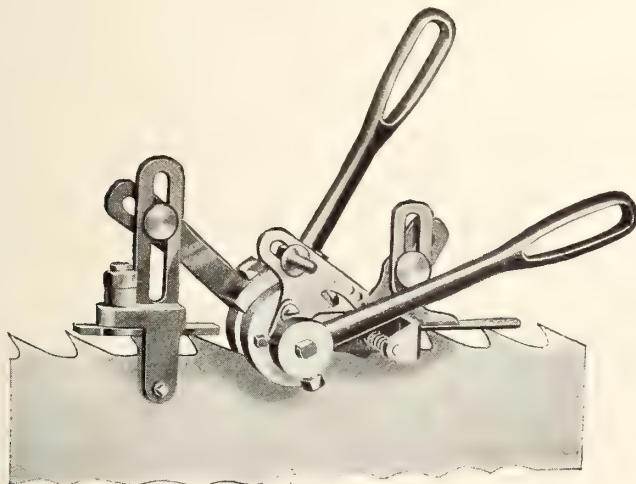
Operating side of lathe. Dotted lines show movement of sliding carriage.

stands at the back of the lathe. The shavings are thus thrown away from the operator. This also allows an exhaust pipe to be used to carry off the shavings without in any way affecting the operation of the machine.

Turnings as large as $1\frac{3}{4}$ in. in diameter and 7 in. long may be produced.

Swage for Band and Circular Saws

The accompanying illustration shows a Cromwell swage for band, circular and gang saws. This is one of a line of saw fitting tools manufactured by D. J. Crowell, Buffalo, N.Y. The Crowell swage is made



A swage from the Crowell line

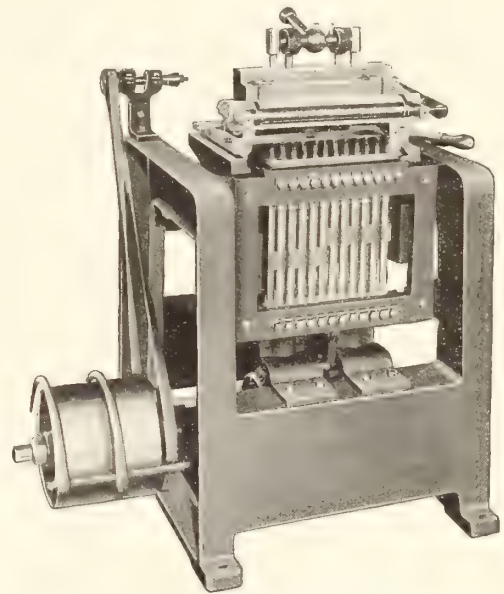
in a number of different sizes to take saws from 8 to 22 gauge, providing the tooth space is not less than $\frac{3}{4}$ ". The main feature of the swage is that there are not complicated parts to get out of order and the adjustment from band to circular saw is easily and

quickly made. It will work on teeth of any angle from 35 to 50 degrees.

The Crowell line includes in addition to the swages a number of shapers for the different kinds of saws and a few special tools for fitting cylinder saws.

Dodds Dovetail Machine

The Dodds dovetailing machine is designed with special bed to work either straight or small front material. It is made in different sizes with from ten to twenty-five spindles working stock varying from 9 in. to 24 in. It can be had for straight furniture work or in a combination machine for furniture and box work. The spindles are gear driven requiring no belts except the drive belt. The machine illustrated



Dodds 12-spindle dovetailer

is the twelve spindle machine for working stock up to 11 inches in width. This is a front view and shows the spiral gears that drive the spindles. The centres may be 1 in. or $\frac{1}{2}$ in. as required and will make visible or blind tenons. Can be furnished with motor attached for individual drive.

The A. R. Williams Machinery Co., Toronto, are the Canadian representatives for these machines.

S K F in New Quarters

Owing to a rapidly expanding business and to take care of an increased sales force the Canadian S K F Co., Toronto, Ont., were forced to seek larger and more commodious quarters. Their new address is 83 King St. East, Toronto. O. H. Willison who has been on the head office staff at Toronto is being transferred to Montreal and will have charge of the branch there. As heretofore Mr. Gordon Janes will direct the activities of this growing concern.

"Today I have received the copy of your "Annual," and I wish to congratulate you on the splendid number."

Otto A. Jiranek,
Grand Rapids, Mich.

Upholstering and Trimming

A Chat on Efficiency in Upholstering

By H. A. B.

Hey Tom, Hello Tom, Hey! Hey! Tom was driving along in his car and heard the above excited call. Tom threw out his clutch, put on his brake and turned around to see who was calling him, and saw on old friend, from the country, one he hadn't seen for eighteen months. "Well, how are things, Tom?" "Oh, fine," never was better. "How are things on the farm, Dick?" "Oh, not so bad, but I am having difficulty with help, can't seem to get a good foreman. I notice it more since I've gone into politics." "By the way, Tom, how is your new foreman?" "Oh, fine, fine, I'm tickled to death with him." "But why did you get this new man in place of Jack Brown? I am sure Jack was a fine fellow and a good mechanic." Such was the conversation between a manufacturer of upholstered furniture and a farmer friend of his, when they met in the city the other day.

Here is Tom's answer: "Yes, Dick, Jack was a good mechanic, honest, and all that kind of thing, but when it came to efficiency, he was like the man who fell out of the boat, he wasn't in it. For instance, I had a rush order for Barbours; as you know they are one of our best customers; they wanted a Chesterfield set. This was on Tuesday, and they wanted it for Saturday. Of course I asked Jack if he thought he could manage it, and he said "No, it is impossible. I've got Bill Watkins on such a job, and Ben Walker on so and so," etc. So, of course, we lost the order. Now the difference. I was away at Broonsville the other week and I sold a Chesterfield and three chairs on condition that we made delivery in five days. I called our new foreman over long distance, explained it to him. I had my doubts about making delivery on time, but knowing that our new man had shown his ability on previous occasions, I hoped he would not fail me. He said "Sure, we'll have it ready." Note that he said "we," will have it ready and we did.

I will explain the difference between Jack Brown's way of handling the men and the new foreman's way. Jack did not take the men sufficiently into his confidence. He did not understand individual human nature, or else he did not study it. The new man does and that, and other reasons which I will explain further, was the cause of Jack's attitude. The new foreman's idea of his job is this. When he applied for the position in the upholstering department I told him that I wanted an efficiency man. He said "I'm the man you are looking for." He has been with us about eighteen months. Our output has increased, as also have our profits, and we are paying him more than we did Jack Brown, mind you. Now for our new foreman's idea of a foreman's job.

Human Nature a Big Factor

To be an efficient foreman you must understand, first, human nature. You must study the characteristics of each upholsterer you have under you. There are some men who appreciate a kindly word of advice about the job they are working on, others who think

they know it all and who would not appreciate a word about the work, in fact would probably think you a weak man for giving advice, instead of saying—for instance, we'll say two men of entirely different character or temperament are both stitching the same kind of a roll on a chair. There probably was not time, when the chairs were given, to explain exactly how many stitches were required. They are both putting, say, 1 blind and 1 top stitch in it. You discover this and want it rectified. You approach the first man in this manner. "Say, Bill, put one blind and 2 top stitches in this roll, will you?" Note, you approach Bill in a kindly way; but, going to the second man in the same manner, you probably would not get the same results. He would not be so willing to do your way, as if you said: "Put one blind and 2 top stitches in that roll"; addressing him in a slightly abrupt manner.

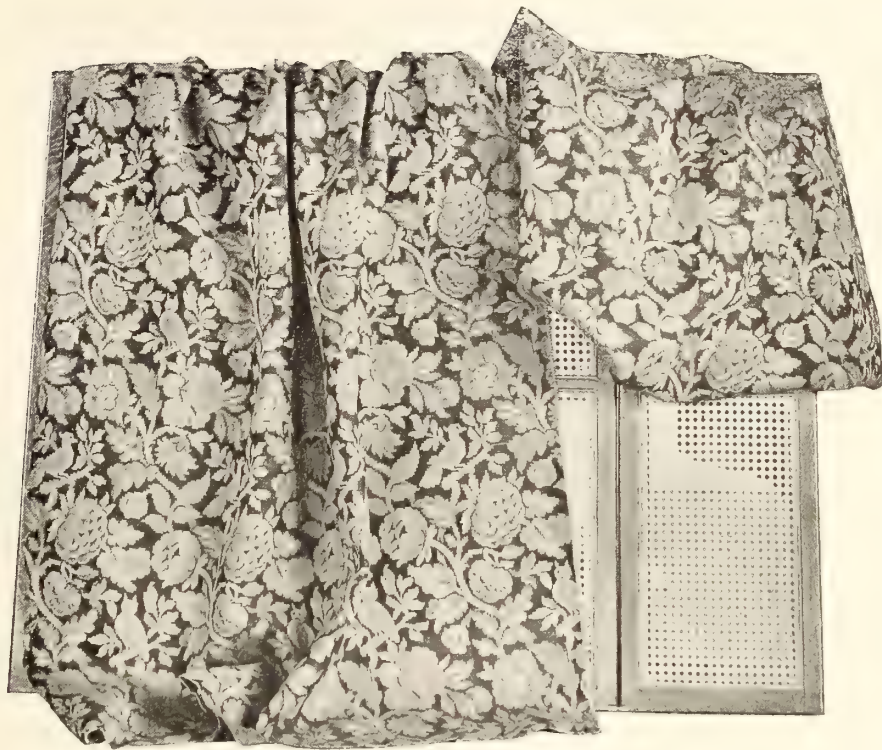
In a workshop employing from 10 to 20 men you will always find a miscellaneous variety of ability. One man is best on first stuffing, one on top stuffing, another on repair work, yet another on high-grade work, and another on cheaper work. It's to the mechanic's advantage, as well as the firm's, to give these men the work best suited to their ability. Of course some men like to work on high-grade work all the time, irrespective of whether they have the ability or not. The usual method is, if he does not suit or wants to work on a job he can't do, or else is not satisfied, fire him; but not for me. I would say to a man of that kind: "Well, John, you know you cannot make a Chesterfield, (or whatever the job may be), and, of course, you have to earn your money. Now you go on with this job and when I can I will give you a chance on better work. It's to the firm's advantage, as well as your own, for you to do better work. Then, if this man has any ambition at all, you have encouraged it and if he did not have ambition, but wanted to work on good jobs for the sake of "show" in the shop, why, you may awaken ambition in him.

As I have said, study human nature and you will then know how to handle cases of this sort. They are bound to crop up in the average upholstery workshop. By encouraging ability you get ambition and the results are bound to be good.

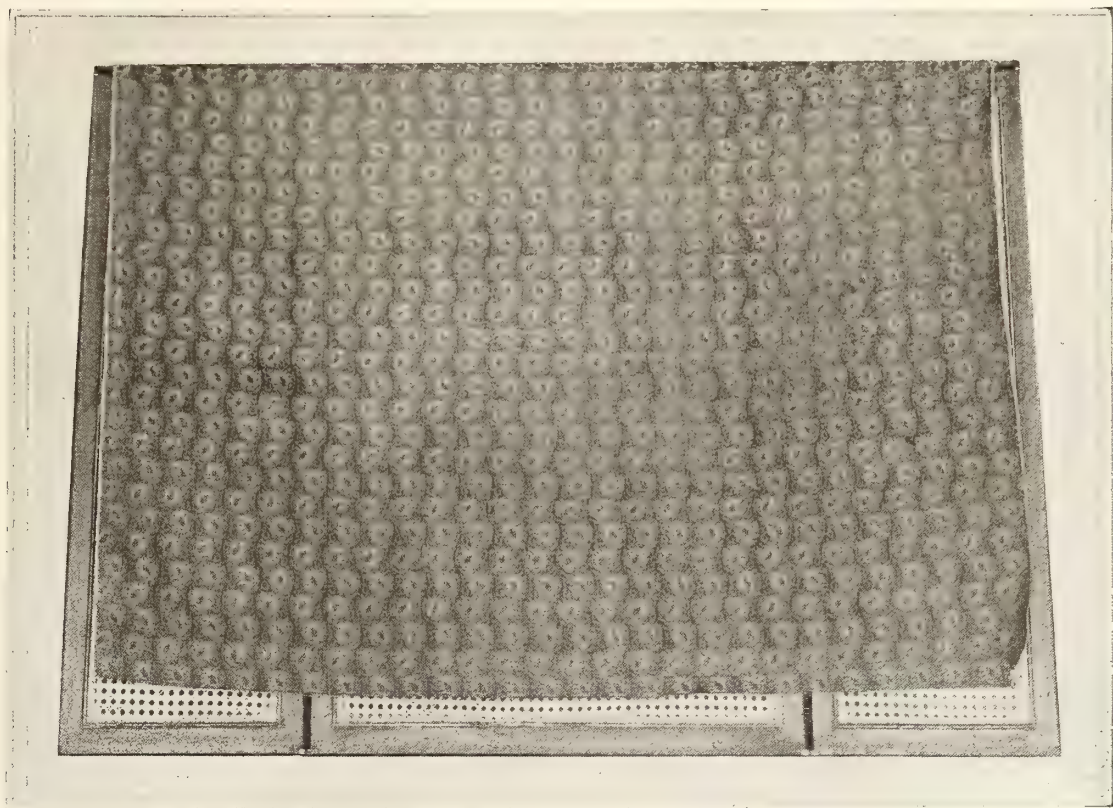
Avoid Wasting Small Items

"Do unto others as you would others should do unto you." A well-known business man once saw one of his men loafing. He said: "Charlie, do you know you have your hands in my pockets?" Waste is a crime. In some upholstery shops there is much waste in cleaning up, in cutting canvas, in not using flvs on expensive material, in spilling tacks and not picking them up, putting in unnecessary stuffing, etc. A foreman upholsterer should himself set an example of economy, as Shakespeare says: "This above all—To thine ownself be true, and it must follow, as the night the day, thou cannot then be false to any man."

If tacks are spilled, see they are picked up. A



An attractive piece of tapestry from the Burch line.



Tapestry in small design suitable for dining and bed room chairs.

trifle, you may say. Yes, but when you are saving the small items, does it not emphasize the saving on the more expensive material. How many yards of material are wasted unnecessarily, where a fly would effect a saving. Tapestry that costs, say, \$6.00 a yard, is used on a deep cushion-seated chair. If in making the arms and back the tapestry is let away down below the cushion and seat, in the place of stopping it nearly to the seat, a certain amount is wasted. If stopped just below, the cushion will hide it, and it means a saving of about 4 in. on from 1 to 2 widths of material, say, about 1/3 of a yard, or \$2.00. Just imagine the waste on a quantity of chairs when a fly, at less than one-fourth the cost, would be just as good, especially at this time of high prices and scarcity of furniture covering.

It is surprising the waste than can be avoided in twine also. Take a man cutting off spring twine for a chesterfield, for instance. Say he has 8 x 4 draws at springs to lace down and, through carelessness, he cuts each piece of twine 9 in. longer than he needs. That's 108 in., or 3 yards. Now that does not seem much waste, does it? Suppose a firm makes 100 chesterfields a year, it would amount to 500 yards waste on that one piece of upholstered furniture alone. Twine costs money these days. You can mention a dozen and one articles, such as canvas, lining, etc., that seem small, but when totalled up at the end of the year, amount to a lot of money. Of course, we are touching on the cutter's job now (if the shop is large enough for a cutter) but still, this should all come under the supervision of a foreman.

Judgment and Common Sense Necessary

Take stuffing materials, some of the old style upholsterers, who have been used to the hard roll, often use too much tow, moss or hair, and not only is this material wasted, but it results in making a hard, harsh roll, instead of a soft roll, as the English or present-day upholstery calls for.

By emphasizing economy, I do not mean to say to be penny wise and pound foolish, for instance, to save 1/2 in. or 1 in. of tapestry or to pick up two or three tacks, or to waste time measuring spring twine to 1/4 of an inch. Simply use tact and reason, and have your men understand that you expect them to at least use common sense with regard to the question of waste. In conclusion, in cleaning up the shop, see that everything of any value is put into its proper bin.

Now, Tom, do you realize why I am tickled to death about the new foreman. Since you were here, about eighteen months ago, I have a real, practical efficiency man; can afford to give him more wages than Jack Brown, and—excuse me, Tom, your engine is still running, wasting gas. Get me! Economy, Tom. Yes, by heck, and I'll keep it running. I am after an efficiency man, Dick, for my farm. Things are in a bad state since I have got into politics, Dick. I never could leave Hike Sawyer, my foreman, for a very long spell. Something's sure to go wrong while I am away, so I'll let Hike go, and get for my next foreman an efficiency chap, as you call it."

Big Increase in Lumber and Glass

Federal regulation of the lumber and glass output of the nation may be necessary to prevent costs of household furniture soaring, G. G. Whitworth, of Grand Rapids, Mich., president, warned the conven-

tion of the National Alliance of Case Goods Manufacturers, while met in Atlantic City recently. The association represents manufacturers controlling sixty per cent. of bedroom and dining room furniture. There is no prospect of an immediate reduction in selling prices, it was said. Charts were produced in the convention showing that woods entering into the making of household goods and grades of glass similarly used have doubled and more than doubled in price during the last sixty days. Delegates emphatically declared profiteering could not be saddled on the manufacturers, as the cost of finished goods was based on the cost plus plan employed by the Government during the war.

It was asserted by the manufacturers here that much of the furniture now on the market could not be reproduced wholesale at the present retail market prices. To add to its troubles, the furniture industry is facing a virtual famine in glass if it does not already prevail, and the big producers are now being forced to bid against one another for materials.

The tremendous demand for motor vehicles, according to manufacturers here, is one of the contributing causes to the glass shortage. Rush demands for heavy glass for auto windshields threatens almost a complete exhaustion of the supply of glass for mirrors.

With the trade clamoring for goods, which the manufacturers are also to promise only in limited quantities, the furniture industry is in a condition that was declared to be "up in the air," with absolutely no certainty as to prices or supplies. The amount of spring stock on hand is small and manufacturers do not feel justified in planning more than two months ahead because of the chaotic labor and supply conditions. No contracts for foreign houses are accepted.

An Actual Incident With a Moral

A short time ago a farmer asked a buggy manufacturer for a price on a certain type of vehicle.

Upon receipt of the quotation the farmer wrote the manufacturer accusing him of profiteering," and similar high commercial crimes and misdemeanors. In justification of his charges he reminded the manufacturer that he (the farmer) had once bought a very similar buggy from the same factory at a price far and away below the price now quoted.

This particular manufacturer operates one of the systematic business concerns that maintains a record of all its transactions.

Upon receipt of the farmer's letter of complaint the manufacturer looked up the previous sale to which the farmer referred.

He found that such a sale had been made, as the farmer stated and that the farmer had paid for that buggy not in money, but with a shipment of wheat.

The manufacturer thereupon replied to the farmer, giving the complete record of the transaction and said: "If you will ship to me for your new buggy the same amount of wheat you shipped for your old one I will gladly ship the buggy and, in addition will ship you a piece of household furniture and a good kitchen stove!"

You can cut out a lot of transmission waste by dividing the machines into groups and linking up the shafting by friction clutches.

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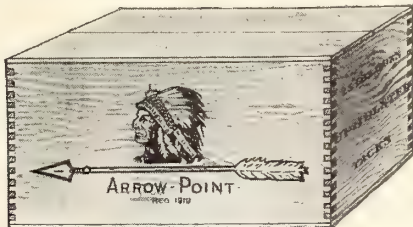
Head Office, KITCHENER

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The points will stick readily and not break off, and the heads are reinforced in such a way that they will not fly off.



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Its anchorage to fabric is second to none on the market today.

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Michigan



Improved Methods of Fuming Oak Produces Fine Fumed Color—Time Reduced, Increasing Output—Evils of Live-steam Method Eliminated

By W. J. Beattie.

Furniture in fumed oak is very popular and the demand does not show any signs of easing off. This has caused many manufacturers to look around for a better method of producing a real fumed finish. The method described in this article has been thoroughly tried out by the writer. It is a big improvement over other methods and has proved to be second to none for the quality and quantity of work produced.

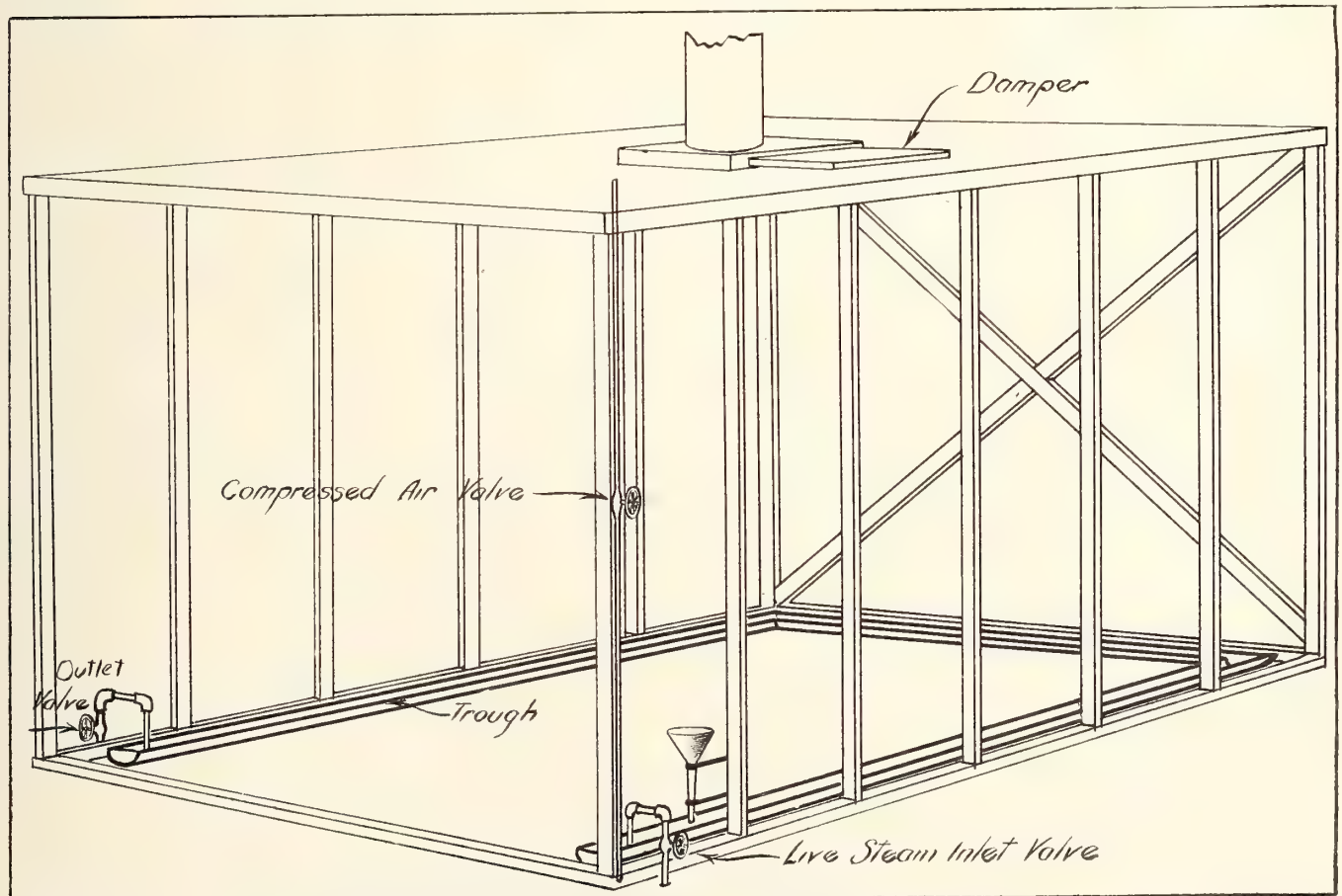
The accompanying sketch shows a good type of fume box, though this is a matter largely for individual requirements and space. A room such as shown, covered with thin matched lumber or heavy duck, will be found quite satisfactory.

The change from the usual type of the one described is largely in the manner of fuming the goods. By the older method the stock was steamed as the liquid ammonia dripped into the box and ran down zig zag troughs into a tank that was heated by live steam.

In a new way the steaming is done away with en-

tirely; that is, as far as the circulation of steam in the box is concerned. A small galvanized iron trough about 2 inches across and about the same in depth, like a small eavetrough, is placed on the floor around three sides of the room. This trough must be laid perfectly level, and in making it the corners should be mitred and soldered. It is supported and protected by a strip of wood at each side, the top edges being turned to form a lip which is nailed to the strips. A quarter-inch steam pipe connected with the live steam is laid in the bottom of the trough. Two valves are provided, one to fit the live steam and the other to take off condensation.

After the box has been filled with the goods to be fumed, the door and ventilator is closed and liquid ammonia is poured into the trough through the funnel provided. This funnel can be reached through a small spring-door placed in the outer wall. When the ammonia has been poured in and the trap door closed, sufficient time is allowed for the liquid to flow completely around the trough and then the live steam is turned in the pipe. The heat of the pipe will evaporate the ammonia very quickly, giving a strong penetrating gas, which will penetrate deeply into the wood. The box is left closed for a few hours, though two hours is sufficient, then the ventilator is opened



Efficient fumed oak installation. May be applied to any fuming box.

and the fumes driven off by compressed air; it is a good idea to carry a compressed air pipe to the fuming room. After the fumes have been driven out, the door can be opened and the goods removed. The result is a fine, fumed color and many of the evils connected with the old steaming method are done away with.

A box 8 x 8 x 10 will require about two quarts of liquid ammonit for each charge. The saving in time and repairs when this method is followed will amount to a considerable sum, even in a comparatively small plant.

The method we follow in fuming and of securing a good fumed finishing oak is as follows: Coat the

sap-streaks with Unifume. This powder is made by the Marietta Paint & Color Co., Marietta, Ohio. The articles are then stained with No. 15 fume stain, Standard Paint & Varnish Co., Windsor, Ont. The stain is reduced by the addition of an equal quantity of water. The articles are now ready for the box after being thoroughly fumed they are taken out and given a thin wash coat of shellac and then sanded thoroughly. The pieces are then shellaced, shaded, sanded and waxed.

Calvin S. Kunkel, travelling representative for the Marietta Paint & Color Co., was good enough to pass along the foregoing idea as being the latest development in fuming oak.

Standardizing Antique Mahogany Finish

Term Should Only be Applied to Definite Finish—Suggestion of Wear and Age Secured by Cutting Down Exposed Parts

By Dixy Wells

When a customer wants a certain finish, antique mahogany, we will say, he generally sends in with the order to the furniture manufacturer a panel of the desired shade, finished according to his taste, and having done this, feels sure that upon receipt of the furniture it will exactly match the sample furnished.

"Antique mahogany" is rather an elastic term, or perhaps, it only appears camouflaged or masquerading under many different shades. It is, at its best, an exclusive and uncommon dark finish, but the word "dark" can be applied to many different colors—browns, reds, blues, greens and the heavier shades all come under this heading, and oftentimes a consumer, dealer or even a manufacturer uses the term antique mahogany to cover many different finishes. As a matter of fact, it is a very definite term and should be applied only to definite results.

Classification of Finishes Needed

In intelligently going over a number of mahogany finishes, antique mahogany should receive its proper classification, and not be applied at random to a finish which is not standard. The standard American and brown mahogany are definite finishes, both as to color and style, and should be strictly maintained. The term under discussion should never be applied to other finishes no matter how popular.

The furniture retailer is coming to understand more and more the meaning of this term, and also of other names, and the consumers as well are being educated to certain period styles and period finishes, and carry in their mind actual shades and surfaces which they are coming to know as standard. However, in many a finishing room the question arises as to exactly what is an antique mahogany. The furniture manufacturers, together with stain producers, are making concerted effort to standardize certain finishes. This is a very commendable undertaking and should receive encouragement, for it cannot but work out to a profit for all concerned, and this cannot be successfully maintained where there are hundreds of formulas created to produce certain standard colors.

Appearance of Age and Wear

In speaking of something old or antique we understand it to mean that a certain piece has gone down through the years and a certain service mark has been created by time's effect upon the original

stain and varnish. An antique mahogany in its original, is really the effect rather of time than of finish. Antique mahogany also, in a way, applies to a certain style which has remained popular and in perfect good taste through the clever work of ancient cabinet makers, and many furniture manufacturers are to-day reproducing these old pieces and endeavoring to imitate the finish as well as the design.

Modern furniture finishing has become, in many instances, an art, and certainly in the reproducing of "antique mahogany" great skill and taste is required, and while as stated, antique mahogany does not necessarily specify a definite color, for there are many correct shades coming down to us from past years—the antique effect which must give the appearance of wear is not easy to acquire by the unskilled workman.

Cutting Down Exposed Parts

You see the effect of long usage must be produced, and still the thing be actually new, with a certain wear showing at the edges, the corners, the turnings, in the crevices, exposed parts, etc. This effect is gained by first finishing the work through as usual, that is, it is stained, filled, shellaced, properly varnished, and rubbed with oil, your first thought in the finishing process being to produce a soft, velvety tone. The outer edges, exposed parts, etc., are then very lightly cut down with old sandpaper, that is, preferably with sandpaper that has been previously used.

By the exposed part we mean the pieces that would naturally receive the hardest wear, and these parts, after being filled, are shellaced, and are what you might call high lighted, that is, they are treated in such a way as to look as if they had been actually worn, but the furniture must be cut down at places, and points where the wood would naturally receive the hardest wear. Thus, you will see an impression of actual wearing has been produced, while an antique mahogany finish is accepted as a dark reddish brown, the furniture in hand will not have the appearance of being actually old unless treated as above stated. In this way many a modern reproduction could pass for an heirloom.

Quick Drying Varnish Desirable

A quick drying varnish is sometimes desired in finishing up mahogany, particularly, where hurried shipments are necessary, and the situation often arises



The above photograph shows the Nichols Equipment installed in the works of the Votey Organ Company, Garwood, N.J. These dryers may be used to turn out furniture, pianos, talking machines, etc., in as many days as it formerly took weeks, and the finish is better, for it is dried scientifically, from the inside out.

If not already Nichols equipped, you owe it to yourself at least to investigate, because:—

- 1—It will easily triple the output of your finishing rooms.
- 2—It will decrease congestion in your factory.
- 3—It will decrease the investment in goods necessarily in process.
- 4—It will enable you to make more prompt deliveries.

We will analyze your particular conditions and then make you a proposition on an equipment that we know, from our extended experience, will save you time and money, as well as improve your product.

We guarantee fully the efficiency of the equipment as well as its mechanical construction. Every installation has been successful. There are hundreds of concerns to whom we can refer you.

A. S. NICHOLS COMPANY, 33 W. 42nd St. NEW YORK CITY

Manufacturers of Dryers for Lumber, Veneers, Glued Stock, Varnish, Paint and Enamels, for both high and low temperature work. Also sole agents for "Zenitherm" insulating material for the making of rooms for both high and low temperature drying.

with finishers, calling for a quick drying varnish which will rub in a few hours and yet match the usual slow drying material.

Here is a little formula which may help out in such cases, particularly where no quick drying standard goods are in stock. Any careful finisher can accomplish the following with good results: Take two pounds of bone dry bleached shellac gum and dissolve in one gallon of wood alcohol or methylated spirits. This latter is always preferable when it can be secured. When this combination is thoroughly dissolved permit it to stand for about twenty-four hours during which time there will collect a clear, transparent liquid on top, and the sediment will be found in the bottom of the container. Carefully pour off this top liquid, taking great pains that the sediment is not disturbed. If some of it should come away with the top portion it will again settle at the bottom, and the top may later be poured off if desired.

This really makes a fine varnish for touching up, and even for the finishing of large surfaces, but as this combination will settle very quickly it must be speedily applied with very little brushing in the process. This quick-drying finish will rub in either oil or water, but better results are produced when rubbing it with oil.

Securing A Fine Enamel Finish

Points that Must Not Be Overlooked When Working Enamel Furniture

By A. Uhrig.

One of the most important items in finishing enamel furniture is to see that the wood itself is perfectly smooth and in good condition, as the paint that is used for undercoats is not a filler and will not fill up depressions and other defects in the wood. A lot of manufacturers seem to think that for enamel furniture almost any kind of wood will do, but in that they are laboring under a delusion as paints and enamels will shrink, allowing all the defects in the wood to appear on the finished surface.

The best practice, to secure a fine finish, is to apply three coats of paint. The first coat, which is really a priming coat, may be applied very thin so that it will have a chance to soak into the wood. The second and third coats should be thicker. After the third coat of paint is thoroughly dry, two coats of enamel are applied.

Sanding is one of the most particular points in enamel work. The surface should be sanded thoroughly after each coat of paint and enamel. Some finishers seem to think that the under-coats do not require sanding, as the following coat will cover the roughness, but that is wrong. The tendency is for all the ridges, brush marks or other defects to show up in the last coat, and a fine piece of work is often spoiled because the sanding was slighted or neglected. The consistency of the enamel must be watched carefully. If too thick when applied, the streaks and brush-marks will not flow out. The temperature of the enamel should not be overlooked. It should be kept at from 75 to 80 degrees, and when applied should be brushed crosswise and then lengthwise. It should not be necessary to state, but the fact must be emphasized, that each coat of paint and enamel should be dried thoroughly, allowing three or four days for drying before the succeeding coat is applied,

and when enamel work is going through, the drying-room should be well ventilated.

The finishing coat should stand five or six days before being rubbed. The rubbing is done with a fine pumice-stone and oil, and a canvas pad used. It should be rubbed to an egg-shell gloss.

Where possible, it is advisable to buy the desired color from some reliable paint company as they are in a position to mix it better than can be done in the ordinary shop. When purchasing enamel, it is well to secure the paint at the same time so that they both may be made the same shade. When this is done, there will not be any danger of the paint showing through and changing the shade of the enamel.

Where high lighting is desired it should be done before the piece is rubbed. The best practice is to put the color on with a small brush, then wipe off all that is not desired so as not to leave too much to be taken off when rubbing. A good color for ivory may be made by mixing raw sienna, raw umber, boiled oil, turpentine and a little dryer. A nice color for gray is flaked white. In finishing in ivory and gold the work should be rubbed first and then a mixture of bronze and dryer applied. Banana oil is often used, but it is harder to wipe off the surface than the bronze and dryer, so is not to be preferred.

Formula for Good Furniture Polish

Polish, if of the proper kind, will prolong the life of varnish on furniture and the more the life of the varnish can be prolonged on the goods he sells the greater the satisfaction to the customer will be—and satisfaction is the keynote to a successful business.

A polish, for general use, should contain an alkali to act as a cleaner, an oil to be partly absorbed by the varnish to keep the varnish elastic, so that it will expand and contract with the change of temperature and less susceptible to scratches; and other ingredients to make it as near fool-proof as possible. "Elbow-grease" must go with any polish to make it successful. Do not be afraid to advocate its use.

Polish should be applied with a soft cloth (cheesecloth which has been washed is very good) moistened with the polish and rubbed perfectly dry with another piece of dry cheesecloth. Do not allow wet polish rags to be thrown into a corner to remain indefinitely as they are liable to cause fire through spontaneous combustion, but burn them up immediately and remove all danger.

Water	33	ounces
Butter of Antimony	2	"
Raw Linseed Oil	60	"
Benzine	3	"
Turpentine	21	"
Ammonia	2	"
Alcohol	7	"

Mix the oil, benzine, turpentine and alcohol in one can and in another mix the butter of antimony with the water, and shake each can thoroughly. Then mix the two together and add the ammonia, again shaking thoroughly, and it is ready for use.

Any waxed surface should be wiped with a dry cloth unless you should want to re-wax the surface after washing, which can be done by dissolving three or four ounces of beeswax in one gallon of turpentine and applying with a cloth and polishing with a dry cloth about one hour after being applied.—Bert D. Wolf in Pullman Service.

Six Months on One Gunstock

Those world-famed gun-makers of Milan thought nothing of spending weeks staining, surfacing and polishing a single gunstock—and then it took months to cure and age it to lustrous beauty.

They produced a wonderful piece of art-craft—but at what infinite cost in care, time and irksome labor! Today they could achieve the same perfect result—in a fraction of the time—with

MARIETTA SPARTAN ART WOOD STAINS

They are made by men who were wood finishers, themselves, for years and know the value of richness of tone and beauty that endures—specialists who make specialties.

Marietta Stains meet the modern demand of fine furniture, piano and cabinet manufacturers for stains that give speed, volume and economy in finishing. They are essentially practical without sacrificing beauty.

We make both water and oil stains, all compounded from the strongest dyes obtainable.

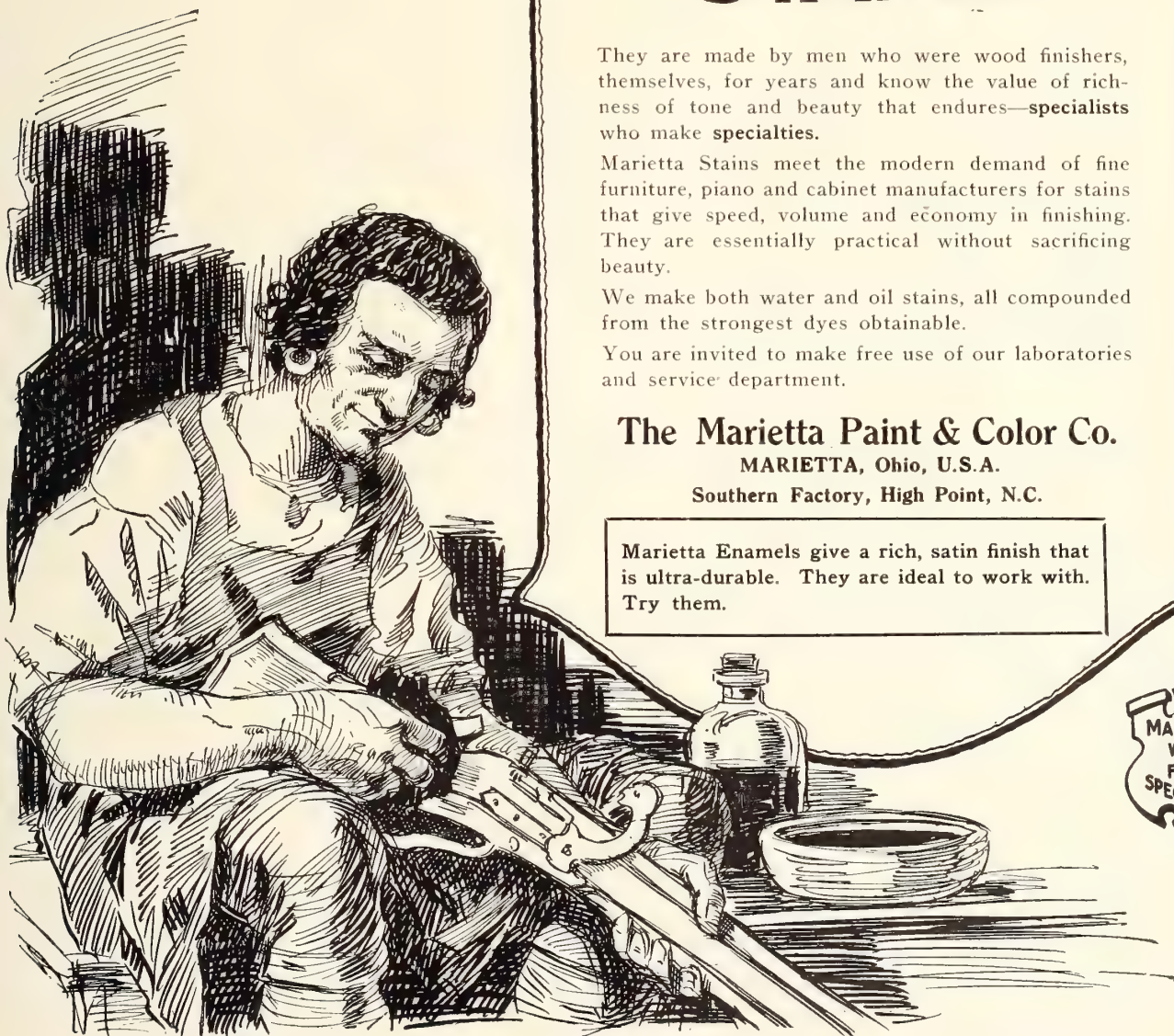
You are invited to make free use of our laboratories and service department.

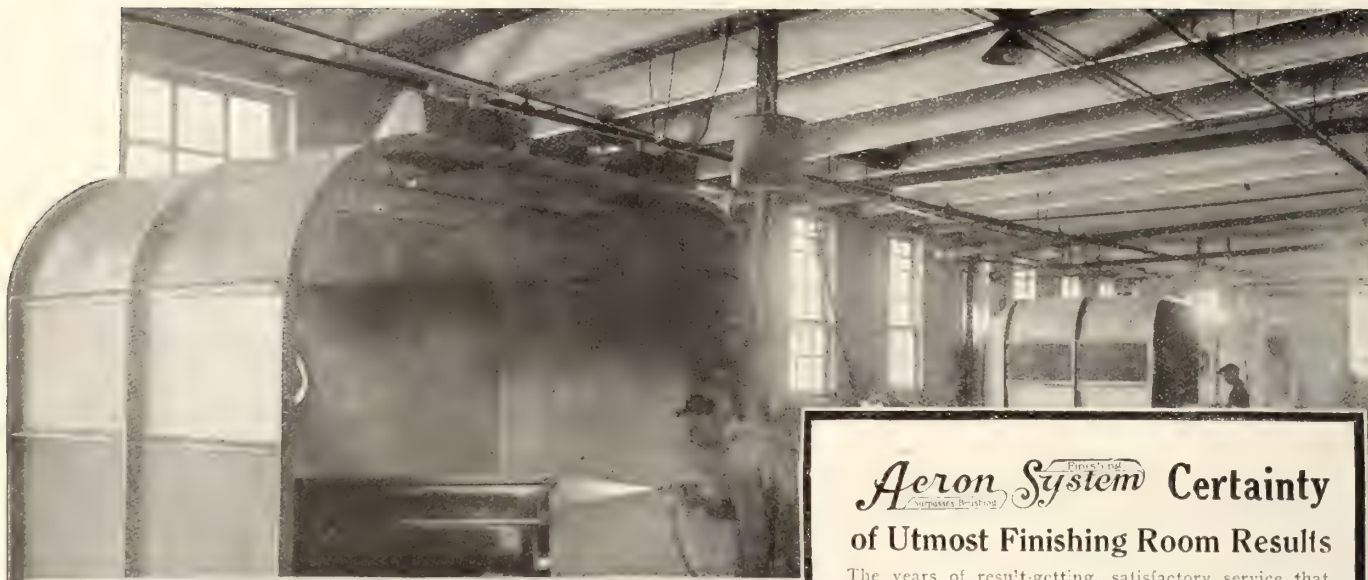
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MARIETTA, Ohio, U.S.A.

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Marietta Enamels give a rich, satin finish that is ultra-durable. They are ideal to work with. Try them.





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The years of result-getting, satisfactory service that the Aeron spray finishing system has been rendering the wood and metal-working industries, gives to each new installation of this equipment an assurance of the utmost in quality, speed and economy.

No matter what type, size or grade of product you manufacture, nor with what kind of finishing material you coat it—the Aeron System undoubtedly is now being used on work of the same or similar character, and will be most certain to make it possible for you to do the highest grade of work at a big reduction in costs.

Operation Facts

The Aeron spray gun easily does the work of 2 to 6 or more hand brushers—governed by nature of work. A cleaner and more uniform coating of every material is applied—there are no brush marks, thin spots or fatty edges. Work is made absolutely healthful and safe—all fumes are completely removed. Equipment is kept in the best working condition at practically no cost. The Aeron System is sold on a strictly guaranteed basis, and every installation followed up by a competent service organization.

Write and let us send on more definite particulars.

THE DeVILBISS MFG. Co. 1318 Dorr St., Toledo, Ohio, U.S.A.

High Grade Stains and Fillers

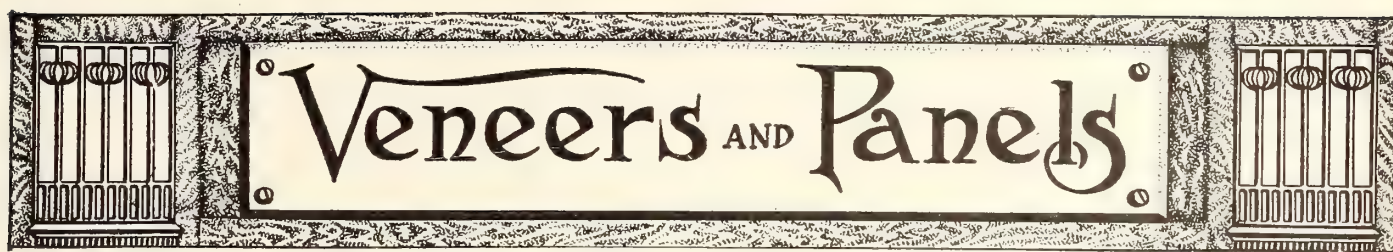
In our Stains you will find the highest possible color values—they are positive—they are permanent. Manufactured in quantities from the best quality raw materials.

Wood Fillers also that have been tested under the most difficult of varying circumstances and found satisfactory.

Eliminate trouble in your finishing department by using these tested materials.

WRITE FOR PRICES

The
Edward J. Shannon Company
CINCINNATI, OHIO



Problems of the Veneer and Panel Business

By S. B. Anderson*

We read in scripture of the seven fat years and the seven lean years that visited Egypt in the time of Pharo. There was in Pharo's court a very shrewd man named Joseph—Joseph was a good business man and in charge of the business affairs of the country. His motto was "make hay while the sun shines," or at least he put this precept in practice—"the earth bringeth forth by hands full," and he "gathered corn as the sands of the sea, very much, until he left numbering." He foresaw that the fat years would end and in due course of time the "years of plenteousness that was in the land of Egypt were ended" and "the years of dearth began" and "the famine was over all the land" and "all countries came into Egypt to Joseph for to buy corn," and you remember the rest—moneys, cattle and finally all the lands passed into the hands of Joseph and the people became the bondsmen of Pharo.

We are now in the fat years. Business is good, profits large—demands for our products in excess of supply. We are crowding our business, in short, "the earth is bringing forth in hands full." I have thought that the example of Joseph might be at least a suggestion to us. When prosperous we are prone to do as the people of Egypt did in their fat years—spend our riches carelessly, giving no thought to the possible lean future. I do not want to appear pessimistic, but while we may, with reason, count on good business for some years to come, the experience of the past teaches us that good times are not always with us.

Period of Prosperity Ahead

All great wars have been followed by periods of great prosperity and great growth made in wealth and great material advance attained. I think the present will be no exception to the rule. I believe the present era of prosperity will not be short. The world must have goods, and if we produce them our profits will be commensurate with our labor. For four years production has been below consumption and the equilibrium must be restored before the strong demand can weaken. Our product is essential. There is no excess of producing facilities. Our raw material is not over-abundant and is not increasing in quantity. Timber is getting scarcer, less accessible and advancing in price. It is each year more difficult for new enterprises to embark in our line of work. The task for us now is to supply the demand.

Answering to the law of supply and demand our product has advanced in price and is still advancing. Aside from general conditions, special conditions have tended to force prices up. The very heavy rains in the logging sections has made cost of securing supply of timber excessive, so that logs that might have been

bought a year ago for \$15.00 to \$20.00 in some cases are now selling from two to three times that amount. This condition, of course, will not continue—clear weather will come sooner or later and expense of logging be reduced with corresponding shrinking of price of logs, but stumpage is not yet up to its real value. It must advance in price and once advanced it will never again lower, so we must figure paying from now on higher prices for supply of timber than heretofore.

Lay Your Foundation for Future Business

My observation is that more money is made when raw material brings a good price than can be made by using cheap material. Our raw material will probably never again be cheap. It appears to me that we ought, not only while these times continue, make good profits, but we should "cast our anchor to windward" and prepare for the slack that follows all periods of great prosperity—in short, profit by the example of Joseph and not approach the lean years in the condition in which the people of Egypt found themselves, or possibly our moneys and cattle and lands may go and we come out slaves of our creditors.

While business is good is the time to pay debts—to put factories in good shape—introduce improved business methods, in short, get ready for slack times when you have plenty of money to get ready with. We will not have exactly smooth sailing in our operations, but we must meet the problems presenting themselves to the best of our ability. I regret to see quite so wild a market in wood products, including ours. I am inclined to think a fairly profitable and reasonably stable price is better in the long run, than is too high a price, but the extraordinary demands, coupled with short stocks and difficult operation, owing to adverse conditions, must necessarily be reflected in a high market. We can reasonably hope for more stable conditions and a better output with a change in weather conditions soon to be expected.

Labor—All Important Problem

You will pardon me, but I think I am safe in saying that there is one problem, above all others, in the minds of us all—the labor problem. It is a problem that must be solved. Its solution has been seriously complicated by the unreasoning attitude into which labor has been forced by the radicals, who have attained too much influence in labor organizations. These men are none the less enemies of labor than of business. They are not Americans, nor of America. Their fight is against society, but Bolshevism cannot thrive in any country where so many workmen own property. No home owner is an anarchist. The failure of the steel strike is very encouraging—a settlement of the coal strike will probably come soon.

If we can conquer peace with Germany we surely

*Anderson-Tully Company, Memphis, Tenn.

can protect our institutions against a handful of men in this or any other industry. The American people will stand behind the government at Washington in its use of any force necessary to protect American institutions against domestic, as well as foreign despotism. There is no room just now for radicals, either at the head of industries or at the head of labor organizations. In either place they should be suppressed. Then the real problem can be attacked. After studying the problem from all sides I have come to the conclusion that the cause of our trouble is simple and should be apparent to all. There are not men enough to do the work—again a question of supply and demand. Our labor market has always been active and insistent—at times, to be sure, the supply has been in excess of the demand, with consequent result.

Insistent Demand for Production

Until the beginning of the late war Europe had sent to us many thousands of laborers per year and they were all absorbed. For the past five years this source of supply has been cut off. During the war, while the surplus goods were being absorbed, we did not realize that our regular supply of labor was not being received. Only after the war, when we began the task of meeting demands for goods to again fill the depleted warehouses, did we find what had happened to us. Never before has the needs of the people been so great as they are at present. What were once wants are now needs, and the American people demand that their needs be supplied and it is our business to do our share in meeting this demand.

Some may argue that these new needs are artificial and should not be gratified. I disagree. The main difference I see between the civilized man and the uncivilized is the matter of needs. If our civilization is to progress new and growing needs must be provided for. If the civilized man is deprived of the things that denote his civilization he will soon revert to the original—the uncivilized man. I do not wish to be understood by this to excuse extravagance and profligate spending of money. Real prosperity can only come by reinforcing industry with thrift. The reckless expenditure of money on the part of those who for the first time in their career have, through the turn of fortune's wheel, had a surplus of money, is a real menace to the country.

Marked Shortage in Supply of Labor

Now, how is this work to be done? We are each ready to do our share towards commanding the forces for the work, but—and here is the rub—where will we raise our forces? The other day our log man came in and complained that he could not find men to raft his logs. The same day the superintendent complained that he could not get enough men to operate the plant in full, and finally the yard foreman reported that he could not get certain shipments off as his force was short and he could not find new men.

Now, what can be done? We are all trying to produce more than ever before—are doing it—and help is scarce and growing scarcer with no source of supply. We cannot open our ports to an indiscriminate importation from Europe. On the contrary, for our safety, it is imperative that we deport some that are already here. Could we pick out good, honest workers offering themselves from the old source of supply we would be happy, but home demand is too strong

and wages on the other side are too good to allow any large number to leave home.

There must be "hewers of wood and drawers of water." The native born, white American will not do menial work, nor in large number, common labor. He will run a machine or do skilled labor, or fill any of the better jobs, but he does not have to do common labor and it does not pay him to do it.

A part of this shortage can be made good by improved machinery. Every possible place where a new machine will save labor new machinery should be installed and men released for other places. With a machine a man can fill the place of two—four and possibly twenty-five men. Conservation of resources has been the cry, but the one supremely important object for conservation is labor, but with all possible conservation we are still short. If this shortage can be made good the rapid progress of industries must continue.

How can this be done? In a manner conditions can be improved by increasing efficiency. This can be done by convincing the individual that he himself directly will benefit by increased efficiency. The plea that the world or the public (meaning largely the employers) will be benefited will have little influence. A personal appeal in the shape of personal benefit will be an appeal of force.

Give Labor Share of Profits

Very naturally the workman feels that he should himself share in the present universal prosperity. In fact, he does in a measure participate through increased wages, but not in a fair degree. Make him the larger beneficiary and you only incidentally a partner in his extra earnings and he will second your call for efficiency.

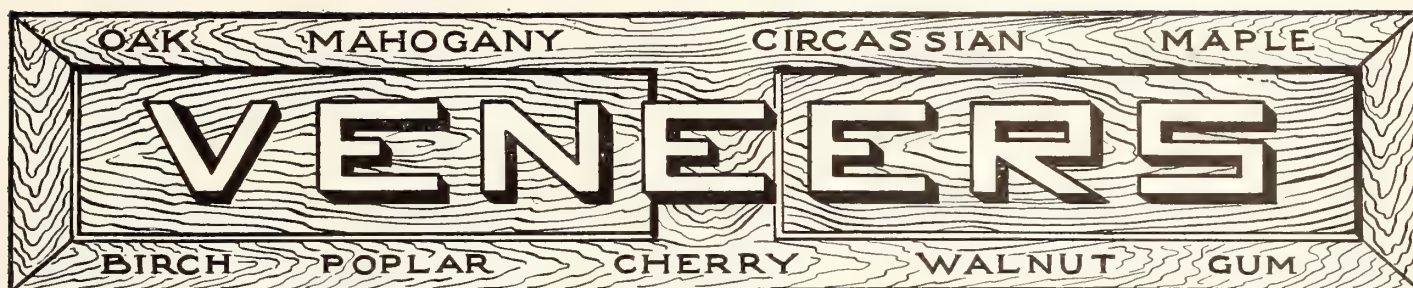
Now, if we should profit to the largest extent through present conditions, we must put aside selfishness in our dealings with our workman and treat him as a full and possible senior partner in this fight for efficiency. The needs are urgent and the demand is imperative. This is enlightened selfishness. We can help ourselves most by helping the other fellow most. In this incident the other fellow is our employee. I doubt if the present working force when brought up to a good degree of efficiency will be able to answer all demands.

Hard to Replace Common Labor

Who is to do our common labor? This was formerly taken care of by our immigrants—now we have no immigrants. Some are suggesting, although I am not convinced of the wisdom of the move, that a limited number of Chinese coolies be admitted yearly under very stringent regulations—enough to relieve the strenuous call for common labor, domestic servants, etc., but not in large enough numbers to affect wage scales. Possibly this is worth considering.

While there are other important problems always to be met, this of labor is of such transcendent importance that all others seem of little note. As I said to you in a former address, this problem can be solved only by making our valuable, dependable workmen real partners in our operations. Hope of substantial reward must be the stimulation to good work, and after all there is nothing so cheering and stimulating as the thought that you are working for yourself.

I trust that the lean years are far in the future and when they do come we will be well prepared for them. The issue is with us—the fight is ours.



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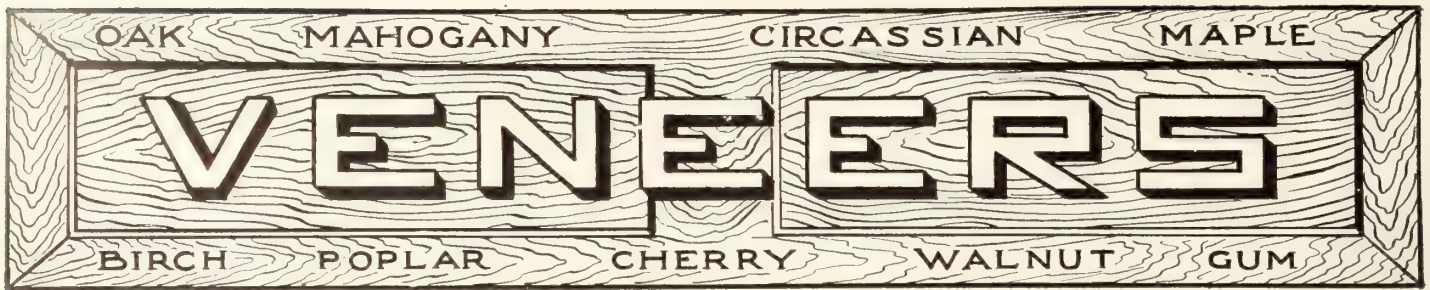
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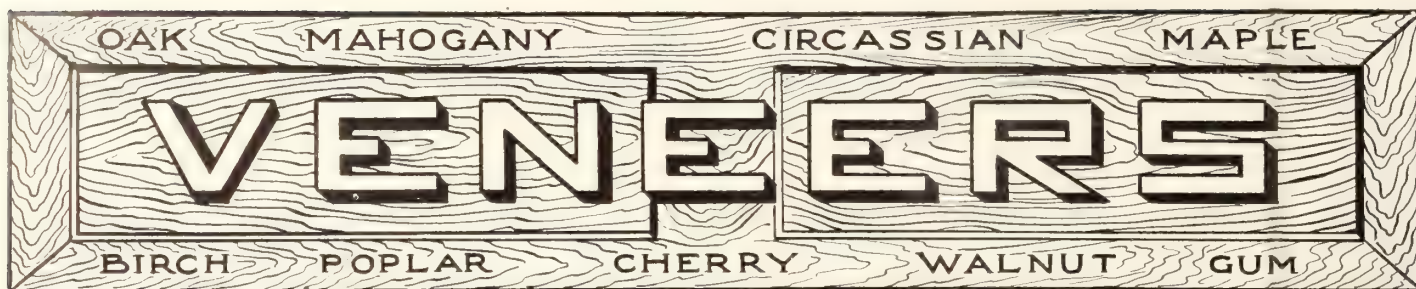
two years. Fifty-two years' close study of the hardwood resources of the northern region has kept us always in touch with an ample supply of as fine quality white oak, walnut, ash and other logs as could be found here fifty-two years ago. A half century study of manufacturing has kept us always ahead of the procession in equipment and methods. The aim has been always to get the maximum of quality out of an exceptionally high quality raw material. This business having always been in the one family, it has been traditional that each generation should add something to the quality of the hardwood lumber and veneers produced. Today we offer you the highest possible type of product; a service based on fifty-two years of holding customers through proper handling of orders and a constant effort to still further improve both wherever possible.

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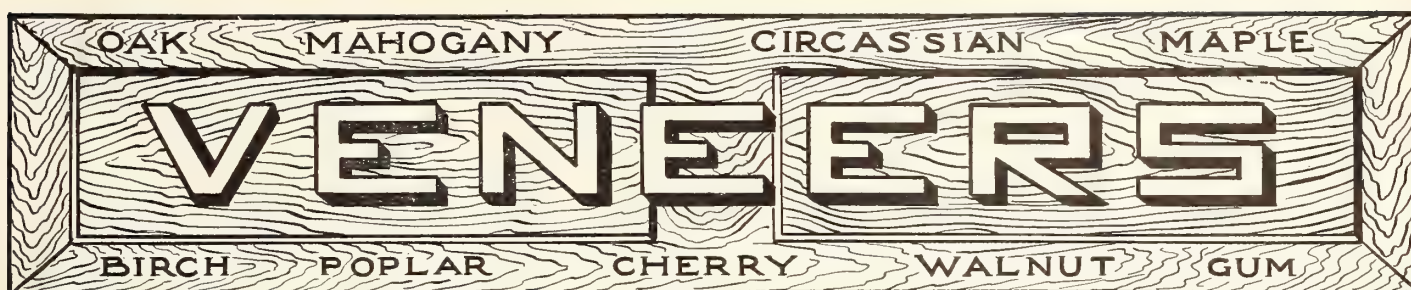
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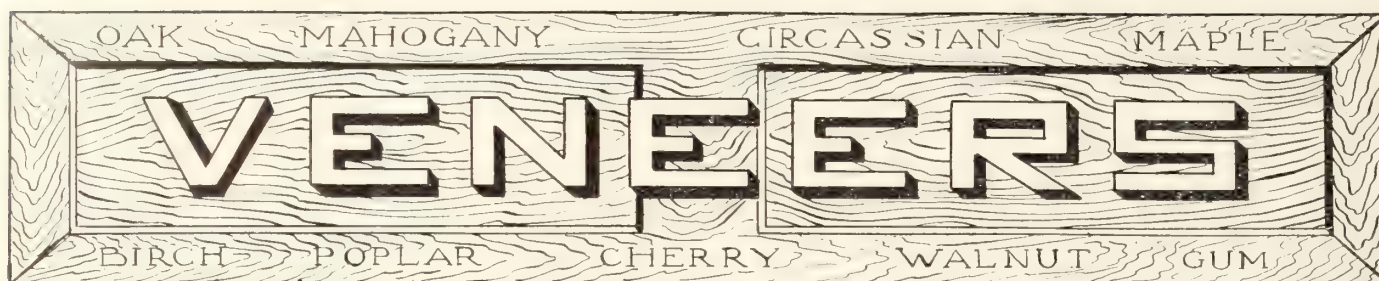
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A Practical and Theoretical Treatise

By HARRY DONALD TIEMANN, M.E., M.F.

In charge, Section of Timber Physics and Kiln Drying Experiments of the U. S. Forest Service. Special Lecturer in Wood Technology and Forestry, University of Wisconsin. Forest Products Laboratory, Madison, Wisconsin.

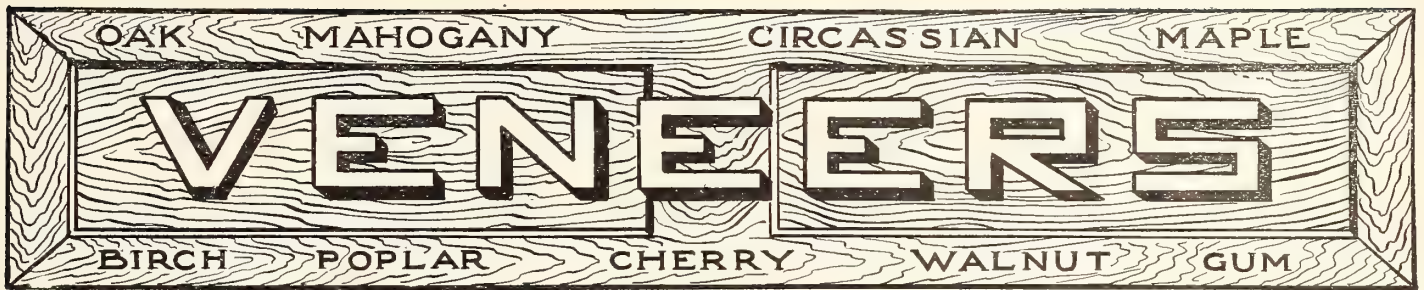
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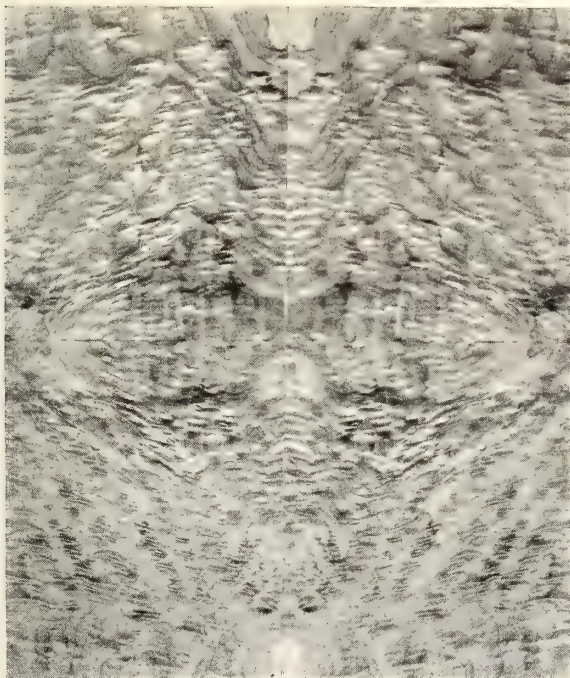
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5/4"	35,000	2,300	2,500	10,000	25,000
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Veneering Curved and Intricate Pieces

How to Overcome Difficulties in Preparing Cauls and Cores—Waste from Cores Utilized for Cauls—Veneering by Sandbag and Rubbing Methods

By John Welmers

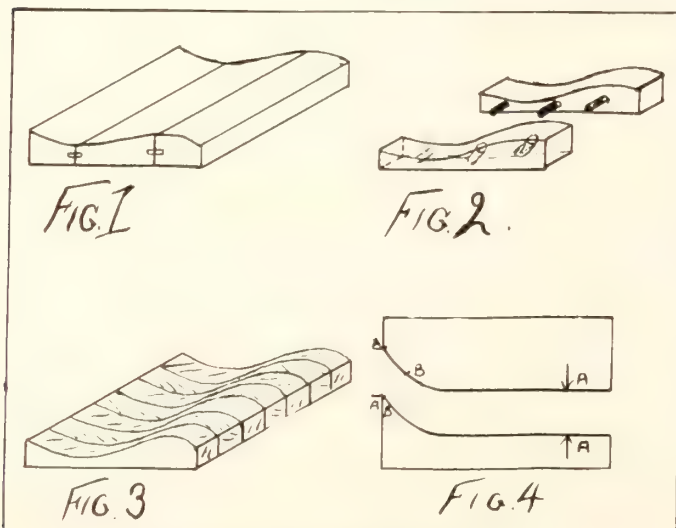
The veneering of curved surfaces is an art that is closely allied to flat work. The difference is chiefly in the way the corestock and cauls are prepared. The methods of glueing are practically the same. The stock should be put under pressure as quickly as possible and, where animal glue is used, heat must necessarily be applied. There are a number of different ways to veneer curved surfaces, some with thick cores and others without. The different kinds may best be treated separately as this will tend to eliminate any confusion that may exist.

Curved panels are usually found in case-work, door panels, etc. In many instances a thin panel will serve as well or even better than a thicker one. The laying of this type of work requires cauls shaped to the desired curve. These may be made several different ways.

Suggestions for Preparing Cauls

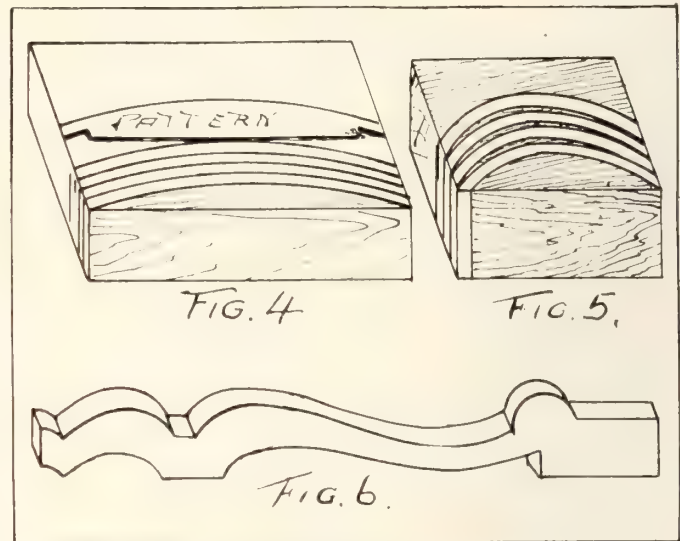
Sketches number one, two and three, illustrate the way the cauls are usually made up. The caul shown in the first drawing is made of three pieces, shaped on a sticker, jointed together with slip tongue to insure a level face. The second sketch is of a caul made of bandsawed pieces glued together with dowel joints. This is a cheaper method, specially where only a few pieces are required, as it does away with the expense of setting up the sticker. If the parts are accurately bandsawed it should not require any great amount of labor to even up the face side of the different pieces.

The third form of caul shown in Fig. 3 is made up of a number of small members, each piece having been shaped to a pattern. The joints are plain. The method of glueing them is to place strips on a bench or table, so that the curved surfaces rest on the strips.



Illustrating different methods of making cauls.

plied to make the hollows touch. Sketch No. 4 indicates how this occurs. If the distance between the cauls at B is measured parallel to A it will be found



Various forms of veneered work.

to be the same. Space is the thing that we are interested in, and it can be readily seen that the distance at A is greater than B. One might say "Why not shape the top caul to give equal space throughout?" That would be alright if the shape of the panel were not important, but if the pieces are all required the same shape, it would not do.

Cores of Unequal Thickness

Many manufacturers make curved drawer fronts with cores that are thinner at the ends than in the centre. This practice is equally as applicable to serpentine or wavy drawer fronts. The pattern for this core is made as shown in figure five. The ends are cut away sufficient to leave an edge the thickness of the ends of the core. The first core is marked and then each succeeding mark is made with the ends held at the last mark made. The advantage of this method is that there is practically no waste except the top and bottom block and even these pieces come in handy as they serve as cauls with which to glue the entire block in one piece.

If the fronts are carefully bandsawed it will not be necessary to surface the faces before veneering the pieces. The difficulties encountered in glueing curved panels are met with here. If the curve is severe, it will be more difficult to glue five ply than three ply.

The popular round-cornered beds have quite frequently curved panels with equal cores. These are for the corners and generally fit into a cap or arm. The cores are bandsawed from blocks, as shown in the sixth sketch. All the cores and waste pieces are numbered, for in glueing corners like this it is necessary to use all the waste pieces for cauls.

Veneers Applied by Rubbing

When glueing cross-grained veneer on narrow curved surfaces, such as the leg shown in figure No. 7, the

If animal glue is used each alternate piece is coated with glue on two sides, while the intervening pieces are heated, to insure good joints.

It is not practical to glue many curved panels at one time for if that is done, the ends or rises in the curves will be squeezed thin if enough pressure is ap-

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veneer is rubbed down. The glue is first applied to the section to be veneered and a strip of veneer started and tacked down at one end by means of a strip of wood and fine veneer tacks. The remainder is rubbed down, using a wide-faced veneering hammer and then tacked. If the curve is very sharp, it is advisable to moisten the veneer first.

Curved work that is too intricate to fit wooden cauls to, or where the quantity is not large enough to warrant the expense, can be veneered with sand bag cauls. These are, as the name implies, just bags filled with sand, or a box of sand covered with some strong cloth.

The core is first pressed and worked into the sand until the sand fits the core. After applying the glue the veneer is gently pressed into the mould before the final pressure is applied. The sandbag caul can be heated in the usual way if animal glue is used.

Other ways of veneering curved work that might be mentioned are wrapping, stretching cloth or metal bands over the surfaces, etc. New ideas in furniture and fitments are constantly coming to light and, as a rule, there are new stunts cropping up almost daily that have to be figured out. Necessity is the mother of invention, so a way will be found of overcoming them as they show up.

A Test of the Jelly Strength of Glue

The test described below is used by the United States Forest Products Laboratory in place of the finger test for determining the jelly strength of glues. It is fully as sensitive as the finger test, and has the advantage of furnishing numerical results by which accurate comparison of different glues can be made.

The instrument used in making the jelly strength test is a modified form of an apparatus developed by one of the large glue companies. Its essential parts are a light cylindrical frame, or float, which rests upon the surface of the jelly, and, moving vertically in the frame, a heavy graduated plunger, the depth of whose depression in the jelly is a measure of the jelly strength. The nose of the plunger is hollow, so that it may be filled with shot to bring the weight of the plunger to the most sensitive point for the particular jellies to be tested. By means of a set screw at the top of the plunger, the zero mark on the plunger scale may be set opposite the zero mark of a scale on the frame. This setting may be done when the tester is resting on a perfectly level surface, or, for special purposes of comparison, when it is resting on the surface of a glue which is to be taken as a standard.

Further details of the construction of the jelly tester are shown in a plate of working drawings furnished by the laboratory.

A method of preparing glue for jelly strength tests with this instrument is as follows: Exactly 25 grams of ground glue are added to 300 cubic centimeters of cold water. The mixture is stirred, covered with a watch glass, and allowed to stand in an ice-box for 2 or 3 hours. At the end of that time it is placed in a water bath and gradually heated to 60 degrees centigrade, being stirred frequently but with the beaker covered to prevent evaporation. When the solution is free from lumps, the condensed moisture on the watch glass is returned to the solution, and the glue is poured into a crystallizing dish. A dish which is $3\frac{1}{2}$ inches in diameter and 2 inches deep is very convenient for this purpose. The depth of the

layer of glue in the crystallizing dish should be the same in every case. The dish with its contents is placed in an ice-box for 12 or 15 hours at from 5 to 10 degrees centigrade.

A sample of standard glue is treated in exactly the same way and at the same time as the glue which is being tested.

Both glues are removed from the refrigerator at the same time, and 3 or 4 readings of the depth of depression in each glue are taken. The depth of depression varies inversely as the consistency of the jelly, though not in an exact mathematical relationship.

Expressed in percentage, the jelly strength of the glue under test is equal to 100 times the depth of depression in the standard glue divided by the depth of depression in the glue under test.

Possible Shortage of Veneer Logs

At a recent meeting of the Commercial Rotary Veneer Department of the American Hardwood Manufacturers' Association, held in Memphis, Tenn., it developed that the manufacturers are facing a rather serious shortage of logs. The shortage is not acute at the moment, for the reason that the veneer men brought out large quantities of logs prior to the bad weather or had them in process of transportation or ready for loading. They are now cutting up this timber but they will soon exhaust their supply, generally speaking, and when they do they will be up against it "good and proper." There were more than 10 inches of rain in Memphis and the valley territory during October, compared with an average of 2.33 inches. As a result, logging is now at a complete standstill, has been so for the past three or four weeks, and will probably continue extremely limited during the remainder of November. This is the reason the log supply situation, which is not so acute at the moment, promises to become extremely so in the immediate future. How long it will last will depend altogether on weather conditions and other unknown factors.

The market, it developed during the discussions, is in quite healthy position, with demand readily absorbing everything now being produced or ready for shipment.

Plywood specimens glued with animal, vegetable, casein, and blood albumin glues, and soaked for 20 weeks in gasoline, engine oil, and castor oil at the Forest Products Laboratory, showed no separation of the plies. Shear tests however, gave evidences that a gradual weakening of the glue was going on. The loss in strength in no case was as much as would be caused by the standard test of soaking for 10 days in water.

Experiments not yet completed at the Forest Products Laboratory indicate that the thickness of the glue line in plywood may vary considerably without noticeably affecting the shear strength. In heavier joint work, however, the thickness of the glue line apparently has much to do with the holding power of the joint.

Formaldehyde has been used in some manufacturing processes to coagulate casein, but as an agent for rendering casein glue less soluble it has not proved successful in experiments made at the U. S. Forest Products Laboratory.

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During the war, when Napco was used extensively on government airplane contracts, it was the only thoroughly dependable, absolutely uniform cold waterproof glue obtainable. It passed the most rigid tests time and again with the most gratifying results.

We maintain the same high standard to-day—with the result that manufacturers who used it for government work are now finding it equally satisfactory in their regular lines of manufacture.

These manufacturers are using it for their finest furniture, pianos and other musical instruments, for veneered doors, panels—wherever the requirements of the glue are most exacting. They find that it invariably produces the best joint. They ship their finest veneers into hot or humid climates with every assurance that they will stand up; that they will not peel even under the most unfavorable climatic conditions.

More and more manufacturers are coming to regard Napco as the standard of quality and economy by which other glues are judged. Use Napco in your glue room and your troubles will end.

Our Demonstration Department is at your disposal

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SOLE AGENT FOR CANADA

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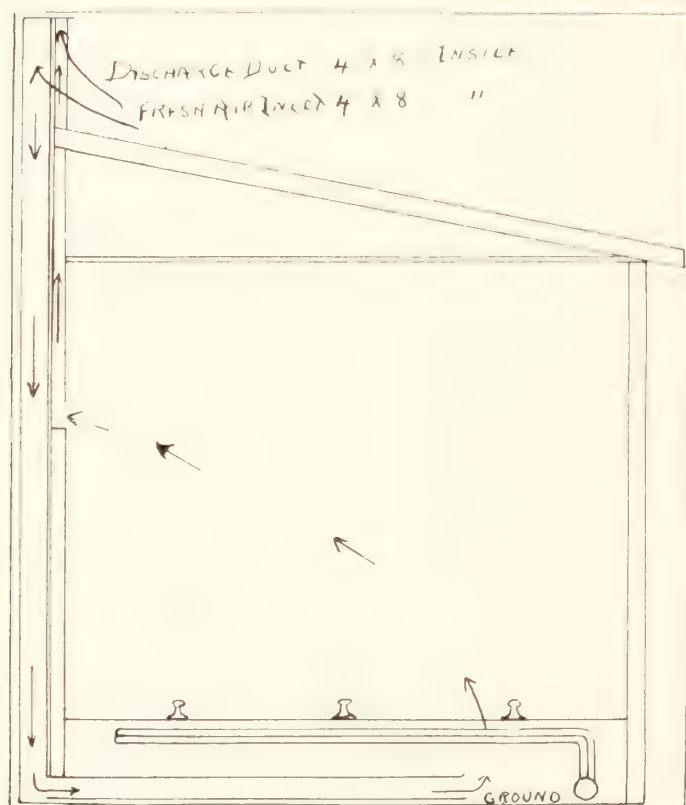
The following letter of appreciation was received from W. T. Castle, Esq., of Montreal, P. Q.

"I wish to thank you for your courtesy in sending to me copies of 'The Annual Number of the Canadian Woodworker.'

"I am impressed with the high quality and tone maintained throughout,—the arrangements of the varying features of its typing and grouping,—even to the advertising pages,—the quality of the illustrated examples chosen, and, finally, the thoughtful and able criticism and critical quality of the editorial pages, which reveal the spirit of conceiving the whole production in the way it comes to the reader. It is as fresh and pleasing as the odor of the 'pines.' "

How to Ventilate Drykiln

Replying to T. Leclair's letter in the November issue, in regard to the proper ventilation for his drykiln, the accompanying sketch will explain itself. His kiln will be 72 feet x 16 feet and should have two double steam coils. Its entire length with the exception of two feet at the dry end and



Construction of air duct to ventilate kiln.

six feet at the green end should not be used to separate the steaming end from the dry. There should be a 1¼ in. pipe lying on or near the ground perforated every six inches with ¼ in. holes. This should extend across the kiln directly under the first green truck of lumber and under the vacant space of six feet that has no steam pipes. This will steam the lumber in good shape and the entire kiln will get moisture in a gradually lesser degree clear to the dry end. Even at the dry end the moisture should be felt on

the face and hands. The sketch is of dry end of kiln and at every eight feet extending the entire length of kiln there should be a fresh air duct 4 in. x 8 in. extending about six feet above the top of kiln and coming in at bottom of kiln discharging fresh air about two-thirds of the way across kiln. Then half way between each of these there should be a discharge duct of the same size extending six feet above the roof and coming through the wall of kiln about five feet above the coils. This makes seven inlet ducts and six discharge ducts in a 72-foot kiln. These will give a good strong circulation that will give the best of results. If live steam is used in the coils it should give 180 to 200 degrees at the dry end. In building a new kiln these ducts are built right in the wall between the studding but in the case of an old building they may be put on the outside and go through the wall, being sure to have them tight.—George H. Hawley.

Comments on Utilizing Factory Waste

A letter received from a western Ontario furniture manufacturer contains the following references to the November "Canadian Woodworker:"

"We found the article on page 96 of your Annual Furniture Number exceptionally interesting as, in a general way, the same description might have applied to our factory about twelve or fifteen years ago, when we made nothing but extension tables.

At that time, we did not use any coal as we had sufficient refuse to run our plant. The extension table business, however, became cut up and prices were whittled down to nothing. We found it more remunerative to specialize in a different grade of work so that to our better table line we added buffets, china cabinets, and are now specializing in complete dining room suites. Where a better grade of cabinet work is required, more labor is used and less material, consequently we do not now make enough refuse to keep our plant running.

"The self-feeding arrangement that you refer to, of feeding the shavings directly into the boiler, was tried out by us and, also, by several other firms and it proved a failure. Ours was put under the directions of one of the largest manufacturers in Michigan, of this kind of apparatus, and theoretically, it appears to work out all right and would in practice if a uniform supply of shavings could be had but when this spout is large enough to take care of a large supply, there are times when none are coming through and a current of cold air is being forced under the boiler. We gave the system a thorough trial in our factory and threw it out as we can run more economically without it.

"We fully approve of specializing and you will probably not find a concern in Canada making the same class of work we do, who have as large an output on as small a number of patterns.

"We would like to compliment you on the Canadian Woodworker for November. It is a very creditable production and compares very favorably with similar publications from the United States."

A charter has been granted to Castona Products Ltd., with a capital stock of \$49,000, and headquarters in Montreal, to manufacture and sell materials of various kinds, including floorings, wainscotings, mantels, furniture, showcases, etc. The incorporators are John P. Hammerd, Joseph R. Papineau, Montreal, P.Q., and others.

**For ~
Economy
and
Utility ~
use**



Cottonwood

Our thirty-three years of operation in high-grade Southern hardwoods have put us in an unusually good position to accurately observe the condition and tendency of markets. The present abnormally high level for most woods is the natural result of conditions over which lumbermen had no more control than did buyers. At the same time the very abnormality of the situation has caused uneven price levels—some excellent woods can be had today at considerable saving over prices of other woods having the same utility. Thus we now earnestly recommend to careful buyers in the kitchen cabinet and similar fields where a smooth-textured, easy-working wood of good widths is desired that they

Use Our $\frac{4}{4}$ inch

F.A.S. Cottonwood

**6 inches to
12 inches Wide**

Our cottonwood is strictly of the yellow variety and is an exceedingly desirable and useful article. Remember our recommendation is based on many years of experience and that in our 70,000,000 feet of annual southern hardwood cut are all the competing species. Thus this recommendation is strictly to benefit the buyer who is wise enough to heed it.

ANDERSON-TULLY COMPANY

Service from Mill to Factory

MEMPHIS,

TENNESSEE

News of the Trade

The Verdun Broom Company was recently registered in Montreal, P.Q.

The St. Lawrence Broom & Brush Co. were recently registered in Montreal.

The planing mill of Wm. Gerry & Sons, London, Ont., was recently damaged by fire.

Mark Rogers, Parry Sound, Ont., is planning to instal a band re-saw in the near future.

Dodd & Landry, carriage manufacturers, of Knowlton, P.Q., recently dissolved partnership.

A bedding factory is being erected by the Canadian Bedding Co., Edmonton, Alta. Cost \$6,000.

The Onward Mfg. Co., Kitchener, Ont., are building a three-storey addition, 40 x 50, to their factory.

W. Baechler, of Goderich, Ont., contemplates erecting and equipping a furniture factory at a cost of \$100,000.

F. E. Coombe Furniture Co., Limited, Kincardine, Ont., are installing a sprinkler system in their factory.

The plant of the Middlesex Furniture Co., Strathroy, Ont., was badly damaged by the recent wind storm.

The Bishopric Wall Board Co., Ltd., Ottawa, Ont., are erecting a factory at a cost of \$35,000.

Recent British Columbia incorporations include the Canadian Western Woodworkers, Limited.

Wm. Murray & Sons, York Mills, N.B., have acquired a site near Hervey Station, and purpose erecting a planing mill in the near future.

Rankin & Company's planing mill and lumber yard, 1536 Dundas St. West, Toronto, was damaged recently by fire to the extent of \$2,000.

The Singer Mfg. Co., Ltd., St. Johns, P.Q., manufacturers of sewing machines, are erecting a battery of dry kilns at a cost of \$50,000.

The Kent Lumber Co., Granby, P.Q., are erecting a new planing mill and are in the market for a scroll saw, sander, shaper and small electric motor.

Montreal Office Appliances Ltd., Winnipeg, Man., have been incorporated to manufacture and deal in office furniture and supplies. Capital \$40,000.

Cushing Bros., Limited, of Calgary, Alta., manufacturers of sash, doors, etc., have sold their Fort Saskatchewan branch to the Frontenac Lumber Co., Limited.

John Duignan, Peterborough, Ont., is manager of the new box factory being erected in Peterborough by the A. McDonald Estate. Electric power will be used.

P. J. Girard and J. A. Bouffard, who recently purchased the sash and door factory in Richmond, P.Q., conducted by A. J. Cross, have registered as Girard & Bouffard.

Otto Higel Co., Ltd., Toronto, Ont., manufacturers of piano actions, are erecting a two-storey addition, 50 x 100, to their present building. This is to be used as a warehouse.

The Bishop-Barker Aeroplanes, Limited, Toronto, Ont., have been incorporated to manufacture and deal in aeroplanes and to carry on commercial flying. Capital \$300,000.

Krug Bros. & Co., Limited, Chesley, Ont., have purchased the boiler, engine and equipment of the old electric light plant at Alliston and will install same in their factory.

The by-laws granting certain concessions to the Brunswick Canadian Products Co., Limited, and the Warren Son, Limited, were recently carried by the ratepayers of Woodstock, Ont.

According to recent reports there is a possibility that an order for 121 vessels may be placed by the French Government with Canadian shipyards. The price mentioned is \$170. a ton.

Recent trade registrations in Toronto include the American Phonograph Co., the Toronto Case & Store Fixture Co., the Voice-O-Phone Co., and the City Pattern Works, 143 Royce Avenue.

The furniture factory at Elmira, known as the Heimbecker & Jung furniture factory, has been taken over by Mr. Heimbecker. It will be conducted as the Casper Heimbecker Furniture Co.

The plant of the Stratford Desks Ltd., Stratford, Ont., was recently disposed of to the Grosch Felt Shoe Co., of Milverton, Ont., and will be remodelled to suit the requirements of the new firm.

Murray-Crawford Ltd., Campbellville, Ont., has been granted a provincial charter to carry on a planing mill business. Capital \$60,000. M. and L. Crawford, of Campbellville, are among the incorporators.

A report from Roxton Falls, P.Q., states that the Roxton Mill & Chair Mfg. Co. have sufficient orders on hand to keep them running for some months. At present they are working sixty-nine hours a week.

Gillies Bros., Ltd., Arnprior, Ont., are erecting a new lumber mill and box factory. The box factory will be 100 x 32, two storeys high and the mill 192 x 74. The total cost will be in the neighborhood of \$100,000.

The Pollock Mfg. Co., Kitchener, Ont., manufacturers of phonographs, motors and supplies, are building an addition to their plant, the new building to be one-storey, 60 x 100, brick construction, at a cost of \$10,000.

The National Show Case Company is being formed in Toronto with a capital of \$50,000. They plan to manufacture a line of showcases and interior fittings. It is understood that a suitable plant has been secured.

Hanover Lumber Co., Ltd., Hanover, Ont., has been incorporated to manufacture and deal in lumber, furniture, frames and builders' supplies. Capital \$40,000. W. Krauter and A. Peppler are two of the incorporators.

The Canadian Phonograph Motors, Ltd., Stratford, Ont., has been incorporated to manufacture and deal in phonograph motors and accessories. Capital \$100,000. W. Preston and D. M. Wright are two of the incorporators.

The Log Supply Company of Berthierville, P.Q., are erecting a large splint factory at a cost of \$2,000,000. This plant will be used to manufacture matches from timber which has, up to the present, been considered worthless.

Messrs. T. Bennett & Son, Vancouver, B. C., furniture manufacturers, have been granted a loan of \$5,000 by the Provincial Department of Industries of B. C. The loan will be expended for new equipment, raw material, etc.

The Royal Rousillon Limitee, Macamic, P.Q., has been incorporated to manufacture and deal in furniture, sash and doors, cabinets, etc. Capital \$20,000. D. Dumont and F. Turcotte, both of Macamic, are among the incorporators.

The wind-storm, which recently swept Ontario, did considerable damage to the plant of the Pfeffer Planing Mill, Stratford, Ont. The roof was torn completely off and carried a short distance, where it settled over the tops of two houses.

The box manufacturers of British Columbia recently got together and organized a box manufacturers' section of the B. C. Branch of the Canadian Manufacturers' Association. Mr. Bruce Clarke was elected chairman of the new section.

Simmons Ltd., Montreal, P.Q., have been incorporated to manufacture and deal in beds of wood, iron or brass, and furniture of all kinds. Capital \$10,000,000. W. S. Morlock and S. E. Wood, of Toronto, are two of the incorporators.

The Restmore Mfg. Co., Limited, Vancouver, B.C., manufacturers of the Restmore line of mattresses and furniture, are erecting a new boiler house and oven. The oven will be used in connection with their line of enamelled iron beds.

The Elliott Machinery Co., Ltd., Belleville, Ont., has been incorporated to manufacture and deal in woodworking machinery and to take over the business now known as the Elliot Woodworker Co. of Toronto. The capital is \$250,000.

Beaverton Toy Co., Ltd., Beaverton, Ont., report that they are very busy with orders for Christmas and spring delivery. They are handicapped by a shortage of help and could use fifty additional hands were they able to secure them.

A by-law will be submitted to the ratepayers of Peterboro, Ont., authorizing that certain concessions be made the Canadian Aladdin Co., Toronto, manufacturers of ready cut houses, who propose erecting a \$70,000 plant at Peterboro.

The Veterans Mfg. & Supply Co., Limited, Toronto, have secured suitable premises at 54 Noble Street and have commenced the manufacture of a line of rattan furniture, including chairs, settees, tables, etc. J. E. McMillan is the manager.

The box factory at Bedford, N.S., owned and operated



Electric or Spring
Driven

'International' Job Time Recorder

It gives you an accurate printed and unchangeable record of every operation in your plant. It eliminates all guess work and turns the shirkers into workers. It is only one of the many types we make—and there's one that will be just right for your plant.

Facsimile Record Card

E	Elapsed Time	CLOCK RECORD
		S 15 9.2
	2.2	B 15 7.0
		S 15 11.1
	1.9	B 15 9.2
		S 15 12.0
	.9	B 15 11.1
		S 15 15.4
	3.4	B 15 12.0
		S 15 16.0
	.6	B 15 15.4

TURN SHIRKERS
INTO WORKERS

Our wish to you at Xmas

Just this—the simple old wish of a Merry Christmas to you and those nearest and dearest to you. It is the old wish, but we extend it with all our heartiest sincerity.

Our suggestion to you at New Years

Investigate the known and proven ability of International Time and Job Time Recorders to assure that throughout the coming year you will get ALL the time you pay for and KNOW EXACTLY what every operation in your plant costs. They will be responsible in a large measure to fulfil our wish that you enjoy Bounteous Prosperity throughout 1920.

It doesn't cost you a cent—except the postage on your letter—to start our booklets on International Time and Cost Recorders on their way to you. Furthermore, it puts you under absolutely no obligation. Make it a New Year's Resolution and the one you will not break.

International Business Machines Co.

Limited

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(Also Makers of Dayton Scales and Hollerith Electric Tabulators).

by Moirs Ltd., Halifax, N.S., manufacturers of biscuits and confectionery, was recently destroyed by fire. The insurance carried amounted to \$50,000. The loss is said to exceed that amount.

The D. D. Gordon Ltd., Ottawa, Ont., have been incorporated to manufacture and deal in phonographs, pianos and all forms of musical instruments. Capital \$75,000. D. D. Gordon and J. D. Cunningham, of Ottawa, are two of the incorporators.

The Canadian Symphonola Co., Ltd., Toronto, Ont., have taken out a permit for an additional storey to their present factory. This new floor will be used as a finishing room. The intention is to proceed with the work in the early spring.

Fibre Cases Ltd., Winnipeg, Man., have been incorporated to manufacture and deal in boxes, barrels and containers made of wood, wood pulp and wood fibre. Capital \$150,000. J. Black and D. Wilson, both of Winnipeg, are among the incorporators.

The Foyer Musical Limitee, Montreal, P.Q., were recently granted a charter to manufacture and deal in pianos, phonographs and other musical instruments. Capital \$10,000. J. de Vaudreuil and G. Vezina, of Montreal, are among the incorporators.

The St. Lawrence Box Co., Montreal, P. Q., was recently granted a provincial charter to manufacture and deal in boxes and containers of all kinds. Capital \$20,000. M. A. Phalen, Westmount, P.Q., and C. G. Ogden, Montreal, P.Q., are two of the incorporators.

The Raymer Mfg. Co., Limited, which was recently formed, has purchased the plant of the North Bay Toy Co., North Bay, Ont., and will manufacture kiddie coasters and other novelties and clothes-line props, racks, etc., in addition to the line of toys produced.

E. H. Gardner's Ltd., Pembroke, Ont., have been incorporated to carry on business as cabinet makers and to manufacture and deal in house-furnishings of all kinds. Capital \$40,000. W. L. Hunter and G. W. Benson, of Pembroke, are two of the incorporators.

The Emerson-Canadian Co., Ltd., Toronto, Ont., have been incorporated to manufacture and deal in phonographs and phonograph accessories of all kinds. Capital \$500,000. J. W. Bicknell, barrister-at-law, and A. L. Clements, both of Toronto, are among the incorporators.

The Phonograph Specialties Ltd., Montreal, P.Q., have been incorporated to manufacture and deal in pianos, phonographs and other musical instruments and appliances thereto. Capital \$150,000. H. H. Duchene and J. J. Tolland, both of Montreal, are among the incorporators.

La Compagnie de Glacieres, C. P. Fabien Limitee, Montreal, P.Q., have been incorporated to manufacture and deal in refrigerators, furniture, store and office fixtures, and doors and sashes. Capital \$100,000. J. Lavoie and J. N. Chabot, of Montreal, are among the incorporators.

The Twin City Furniture Workers' District Council has re-organized and is now known as the Waterloo County Furniture Workers' District Council. Preston and Hespeler have definitely decided to affiliate. The Council embraces all woodworkers, finishers and upholsterers.

The Cut-to-Fit Building Co., New Westminster, B.C., who are erecting factories and sawmill to manufacture cut-to-fit houses, have been granted a loan of \$50,000 by the B. C. Department of Industries. When completed this plant will have a daily capacity of five complete houses.

Messrs. Percy and Chas. Lee, of Owen Sound, recently organized the Lee Mattress Co. The plant is located in the building formerly occupied by the Rutherford Carriage factory. About fifteen men are employed at present and it is anticipated that this number will be rapidly increased.

One of the buildings of the Ericson Aircraft Works at Leaside was destroyed by fire. The loss will be considerable, as this building contained a large number of aeroplane cameras, the lenses of which were valued at \$200 each, and all the wireless outfit used in the training of cadets.

The General Phonograph Corporation of Canada, Ltd., Toronto, Ont., has been granted a provincial charter to manufacture and deal in phonographs and phonograph parts and accessories. Capital \$500,000. M. C. Purvis and G. M. Jarvis, Barristers-at-Law, Toronto, are among the incorporators.

The Canadian Cooperage Mfg. Co., Smith's Falls, Ont., are building an up-to-date heading mill to manufacture head-

ings for cheese boxes, stock barrels, etc. The equipment is all in readiness and it will not be long before this plant is in operation. It is expected to furnish employment for about seventy-five men.

A company has been formed to take over the Listowel plant of the Karn-Morris Organ & Piano Co. J. H. Pettit, Toronto, is president of the new concern, with E. C. Thornton, managing director, and A. E. Windsor factory manager. The plant will be operated to capacity and a new addition is contemplated in the near future.

B. & N. Planing Mill Co., of Milverton, are turning their attention to the manufacture of furniture. At present they are producing a line of dressers and stands. Their intention is to erect a new furniture factory in the near future and to dispose of their planing mill. It is anticipated that the new factory will be in operation by spring.

A company known as the St. Thomas Boxes, Limited, St. Thomas, Ont., has been organized and has acquired the sash and door factory of Henry Lindop & Son, St. Thomas. The plant will be remodelled to manufacture wood and paper boxes. W. K. Cameron and A. E. Ponsford, both of St. Thomas, are the men who organized the new concern.

A company known as the New Westminster Furniture Mfg. Co., has been formed in New Westminster, B. C., with Walter Dodd and Robert Steele as two of the principals. A lease has been obtained on the factory formerly owned by the Brooks Woodworking Co. The plant is being remodelled and a considerable amount of new machinery will be installed.

J. F. Wildeman, who has been connected with the Crown Furniture Co., Limited, Preston, Ont., for the past year, has acquired an interest in the firm. It is understood that he has purchased all the Hanning interest in the Crown Furniture Company. Mr. Wildeman was with the Office Specialty Co., Limited, of Newmarket, Ont., for twenty-nine years, and played no small part in the building up of that large organization.

Personals

Harry Spence, of the Cranbrook Sash and Door Factory, Cranbrook, B. C., left recently on a trip to Eastern Canada.

W. C. Gall, of the Gall Lumber Co., Toronto, who has been laid up with an attack of sciatica, is once more able to resume his duties.

Alvin J. T. Cochrane, Dutton, Ont., recently passed away. Mr. Cochrane conducted a planing mill and contracting business in Dutton.

Peter Gagnon, who has been acting manager for the Durham Furniture Co., Durham, Ont., was, at a recent meeting of the board of directors, appointed manager.

R. McDonagh, of Hart & McDonagh, wholesale lumber dealers, Toronto, who has been laid up with a bad attack of rheumatism, is around again and able to attend to his work.

T. Gadd, Vancouver, B.C., manager of the Cedar Cove Sash & Door Factory, is making a tour of Eastern Canada. He will cover the prairies very extensively and will visit Toronto and Montreal.

Major James Brechin, who has filled the position of B. C. Lumber Commissioner for Eastern Canada, left recently on return to Victoria, B.C. He is being succeeded by Mr. Wm. Robertson, of Victoria, B.C.

Hiram McLean passed away recently in Truro, N.S. Of late years Mr. McLean had been associated with H. McKay as shipbuilders and lumber manufacturers. The firm has built a number of large vessels and at the present time have one in course of construction.

H. Bruce Beattie, Owen Sound, Ont., was married recently in that city. Mr. Beattie, who served with the C.E.F. in France, and later with the Canadian Army of Occupation in Germany, is the author of the articles, describing choice pieces of old European furniture, which proved so interesting to the readers of the "Canadian Woodworker."

Mr. John Wentworth, manager of the Canadian branch of Waring & Gillow, furniture manufacturers, Montreal, died in the Western Hospital on December 6. Mr. Wentworth, who was 52 years of age, was born in England, and came to Montreal in 1892, to take over the Canadian branch of the British firm. During the war he was commissioned by the British Government to purchase material in the United States. He is succeeded by Mr. Charles Brooks as manager.



Greenwood, Miss.



Greenwood, Miss.



Opportunity - Prosperity Success

*These are the things we wish
for you next year and if, in
any small measure, we can
assist in their fulfilment,
we wish that high privilege
also.*

KRAETZER - CURED GUM IS BRIGHT,
STRAIGHT AND FLAT



Greenwood, Miss.



Greenwood, Miss.

Proper Method of Laying Oak Floors

Make Sure that Stock is Absolutely Dry—Allow for Shrinking and Swelling in Sub-Floor—Suggestions for Finishing

By W. L. Claffey



ODAY by improved machinery, equipment and quantity manufacture, the cost of making flooring has been so reduced that beautiful oak floors are now within reach of everyone. Oak flooring is generally laid by a profession commonly known as floor layers, who specialize in the laying of hardwood floors. These floor layers may be divided into two classes—good workmen and a class that are careless. The expert floor layer obtains his reputation by the high class and perfect work that he turns out. It is practically his only asset in the game. Many large and prosperous floor laying concerns have reached their prosperous condition chiefly through conscientious workmanship in their earlier days. The floor layer that is careless in his work will never succeed. It is not necessary to be an expert to produce a good floor laying job, but it is very essential that considerable care should be exercised and all the details from the very start to the finish should be carefully studied before the floor laying work is taken in hand.

Before starting to lay oak flooring, the stock should be examined to ascertain if it has absorbed any moisture while at the lumber yard, on the wagon, or at the job, as usually during rainy weather, oak flooring will absorb considerable moisture, mostly at the ends—thereby causing it to swell as much as one-sixteenth's of an inch. If this condition is not discovered before the floor is laid, unsightly crevices will appear in the floor. The sub-floor, as well as the plaster work, should be thoroughly dry before starting to lay oak floors. If in winter, the rooms should have a temperature of about 70 degrees to insure the best results and the oak flooring bundles should be in the rooms at least ten days to thoroughly dry out in case the stock has been subjected to any moisture, before the main work is started. The flooring leaves the mill in perfect physical condition, but is very often abused by improper handling before it reaches the job. There are many mill men and contractors that treat oak flooring almost like rough-lumber. This is a mistake.

Laying the Sub-floor

The sub-floor should be thoroughly swept and it is well to use a damp proof paper and where sound-proof results are desired, a heavy deadening felt is recommended. The sub-floor should be of serviceable wood, but not less than $\frac{7}{8}$ in. thick, dressed one side to an even thickness, and should be nailed securely to the joists, but not driven too tight together so as to permit it to swell without bulging; four-inch to six-inch strips are preferred widths for stock for this work.

When starting with the first oak flooring strip, it is well to leave at least $\frac{3}{8}$ in. for expansion space between the first strip and the base-board, and likewise at the other end of the room, as there is more or less expansion and contraction in all kiln-dried oak flooring. The flooring should always be laid at an angle to the sub-floor and after laying and nailing three or four pieces, use a short piece of hardwood 2-in x 4-in. placed

against the tongue and drive it up with a heavy hammer.

The nailing of oak flooring is very important. All tongued and grooved flooring should be blind-nailed. The best flooring made can be spoiled by the use of improper nails. The steel cut variety is recommended for 13/16-in. stock—use 8-penny nails every sixteen inches; for $\frac{3}{4}$ -in. flooring use 3-penny wire finishing nails every ten inches. If even better results are desired, the nails can be driven closer.

The floor layer should use discretion in regard to certain strips that do not blend in color with the majority of strips. A few badly discolored pieces in a room will mar the appearance greatly. Badly discolored pieces should always be set aside and used in closets and other out-of-the-way places. Where there is a wide variation in color, it is good policy to separate the pieces before they are nailed down. This insures a more regular run of color and blends better together than if scattered throughout all the rooms.

Refinishing Eliminates Wear

Oak floors with some care should last a life time and it is for this very reason that all floor layers should be very particular when they lay oak flooring. The wood itself practically is never permitted to wear—that is, in the better grades that are used in homes. It is the wax or varnish finish that wears, which is always replenished. Honest and careful workmanship on the part of the floor layer spells success. A good job of floor laying is the best of advertising, while a poor job gets nothing but kicks and no reward.

Scraping is always done on the better grades, or in all homes where people dwell. In order to get the best results for a nicely finished surface, it is necessary to scrape it. This scraping process can be done by the ordinary scrapers, such as used by cabinet makers, or by one of the many types of power or hand machines that are generally used by contractors and carpenters. Always scrape lengthwise of the wood and not across the grain. A floor properly scraped looks very smooth, but it should be thoroughly gone over with No. 1½ sand paper to obtain the best results in finishing. After this the floor should be swept clean and the dust removed with a soft cloth.

The floor is now ready for the filler which should be put on as soon as possible after the laying work is finished, as the filler fills up the pores of the wood and keeps it from shrinking.

Big Shipbuilding Plant is on the Market

After erecting a six-way shipyard with all necessary mechanical appliances and factories, spending \$2,500,000 in wages and utilizing 22,000,000 feet of British Columbia fir in wooden ship-building in twenty-seven months, the William Lyall shipyards plant of North Vancouver, B.C., has completed its work, finds no more contracts available and is now advertised for sale. A great wartime industry has come to an end after producing over 40,000 tons of wooden shipping, most of the vessels being now at sea.

Mississippi Delta Gum

Quartered and Plain
Red and Sap

Oak

Quartered and Plain
Red and White

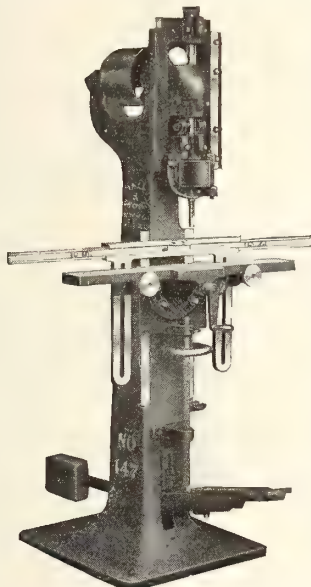


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KORN-CONKLING CO.
CINCINNATI, OHIO

Mills; Percy, Mississippi

"Has Lowered the Cost of Our Production"

That's what one of our customers in Texas says about the H. & B. No. 147 Hollow Chisel Mortiser—the vertical, hollow-chisel, foot-lever feed machine for general use in both hard and soft wood that has made good in



practical, every-day service in some of the best equipped mills and factories in the country and is recommended by users for big production of quality work at low cost.

No. 147 Hollow Chisel Mortiser

makes cuts of any size, length, shape or depth within its capacity and leaves the sides and corners clean and true and bottom square, requiring no hand-finishing. Takes chisels up to $\frac{3}{4}$ -in. square and mortises up to $3\frac{1}{2}$ inches deep, exact depth being adjustable at will. Either belt or motor-belt drive. Plain or compound table.

Stroke of spindle $3\frac{1}{2}$ inches—depth can be regulated to exact point desired by means of adjustable stop. It's a machine that merits investigation.

Get all the facts—write for prices and circular.

Hall & Brown Wood Working Machine Co.
Home Office and Factory, 1913 to 1933 N. Broadway
SAINT LOUIS, U.S.A.

Round off the old year right--

Buy Hardwoods

We offer the following:

60 M' 4/4" No. 3 Com. and Btr. Birch

25 M' 12/4" Birch Hearts

5 M' 8/4" No. 2 C. & B. Soft Maple

40 M' 12/4" No. 2 C. & B. Hard Maple
(Only small percent No. 2 Com.)

1 Car as follows:—

4 M' 5/4" No. 1 Com. & Btr. Basswood

5 M' 6/4" No. 1 Com. & Btr. Basswood

5 M' 8/4" No. 1 Com. & Btr. Basswood

1 car 5/4" No. 2 & 3 Com. Basswood
Largely No. 2 Com.

60 M' 4/4" No. 2 Com. & Btr. Basswood
Guaranteed not over 25% No. 2 Com.
Good width.

Above all Dry.

Canadian General Lumber Company, Limited

712 Bank of Hamilton Bldg.

TORONTO

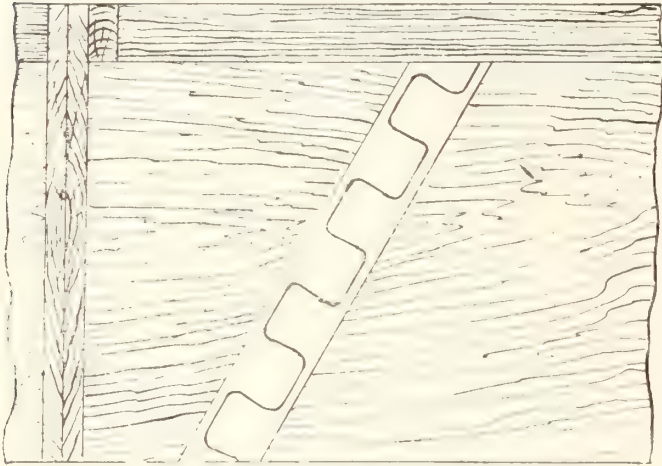
MONTREAL OFFICE: 203 McGill Bldg.

Selling

Graves, Bigwood & Co.'s
Lumber, Lath and Box Shooks

Making Good Joint on Sand Belt

Many operators of belt sanders think that the dovetail joint is the most satisfactory method of joining the ends of the belt together. The accompanying sketch shows a form of tool for making this joint that is used by several large furniture manufacturers. The base is made about two feet long and sufficiently broad to take the widest sand-belt used in the plant. The bottom is made of two pieces of wood. The lower piece, which is the heavier, has the knife at-



Form for making dovetail joint on sand belts.

attached. The top piece does not come quite flush with the top or cutting edge of the knife. The knife can be made any shape to suit the ideas of the man making it. The form illustrated is one that is commonly used. The cutter could be set square if preferred but the bevel joint seems to be the choice of most mechanics. A heavy piece of wood is attached along the back edge, as a guide. The end of the belt to be joined is laid over the knife and the edge held firmly against the guide. A block is then laid over the cutter and given one or two sharp blows with a heavy hammer. The other end of the belt is worked from the other side of the cutter. When finished, the joint is made in the usual manner, preferably with a thin piece of cloth glued to the back.

New Woodworking Concern in St. Thomas

The St. Thomas Cabinets, Limited, St. Thomas, Ontario, have equipped an up-to-date plant to manufacture phonograph cabinets and veneered panels. They have acquired the building formerly occupied by Thomas Bros. Woodenware Manufacturing Co., with a floor space of 105,000 feet, and have installed modern woodworking and panel manufacturing machinery, supplied by the Garlock-Walker Machinery Co., Toronto.

The gentlemen guiding this organization are all known business men. B. F. Honsinger, the president, is one of the big men in St. Thomas, while Joseph Bone, the vice-president and general manager is a practical man with a wide experience in woodworking. He served with the Government during the war in connection with the Canadian Aeroplanes Co., Toronto, and was more recently with the Columbia Graphophone Co., Toronto. Harry Woodhouse, who will have charge of production was with the Canadian Aeroplanes Co. in a similar capacity and will see that the work goes through in an efficient manner.

Reese-Sherriff Lumber Co., Williamsport, Pa., write: "We wish to congratulate you on the very handsome Annual Furniture Number of the Canadian Woodworker and Furniture Manufacturer."

J. B. Woodhouse, the secretary-treasurer, and Capt. E. P. Cash will look after the office and outside affairs. P. A. Honsinger and A. A. Ingram, who are associated with the firm, are prominent St. Thomas business men.

The company is capitalized at \$100,000.

The First Book on Molder Practice

"Machine Molder Practice" is the name of W. H. Rohr's new book devoted to molder work, set-up, operation and general superintendence of the molding machine.

After several years extensive traveling and visiting with hundreds of moldermen, the author was able to get the most improved methods used by experts in all kinds of wood-working establishments working wide varieties of patterns. This opportunity, coupled with his previous years of practical experience, fitted him better probably than anyone else to write this greatly-needed and so long-wanted treatise on molder work.

The book contains 100 illustrations, many of which explain as much as would otherwise require several pages of text matter. More than of interest and help to moldermen, it is equally as valuable to foremen, superintendents, etc., upon whom it sometimes falls to set-up and get the molder ready for operation, or who, at least, should know that it is being efficiently and economically operated.

It is flexibly bound in red imitation leather, stamped in gold, and opens flat. Price is \$2.50 a copy and may be had of the Practical Books Co., Box 372, Indianapolis, Ind.

Progressive Steps in Architectural Drawing

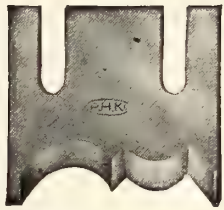
The above is the name of a practical text book by G. W. Seaman, for students and others interested in designing homes. It illustrates and describes, step by step, how a set of plans are developed from the first rough sketch to the finished drawing. Details of construction and design are fully covered. The illustrations include a number of plates showing how plans are laid out and worked in and include architectural lettering and the different orders of architecture.

This volume may be secured from the publishers, the Manual Arts Press, Peoria, Ill. Price \$1.25.

New Work on Blueprinting

"Blueprinting" is the title of a book recently written by John F. Freise and published by the Manual Arts Press, Peoria, Ill. It contains practical information on the arrangement of the printing room, electric and other printing machines, making and working blueprint papers, special papers and special printing. The information is presented in a form which will be readily understood by all who are interested in this subject. Price 75c.

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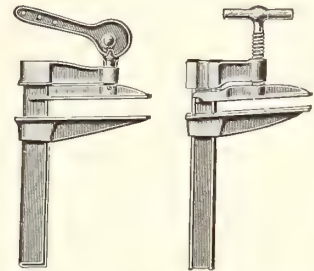
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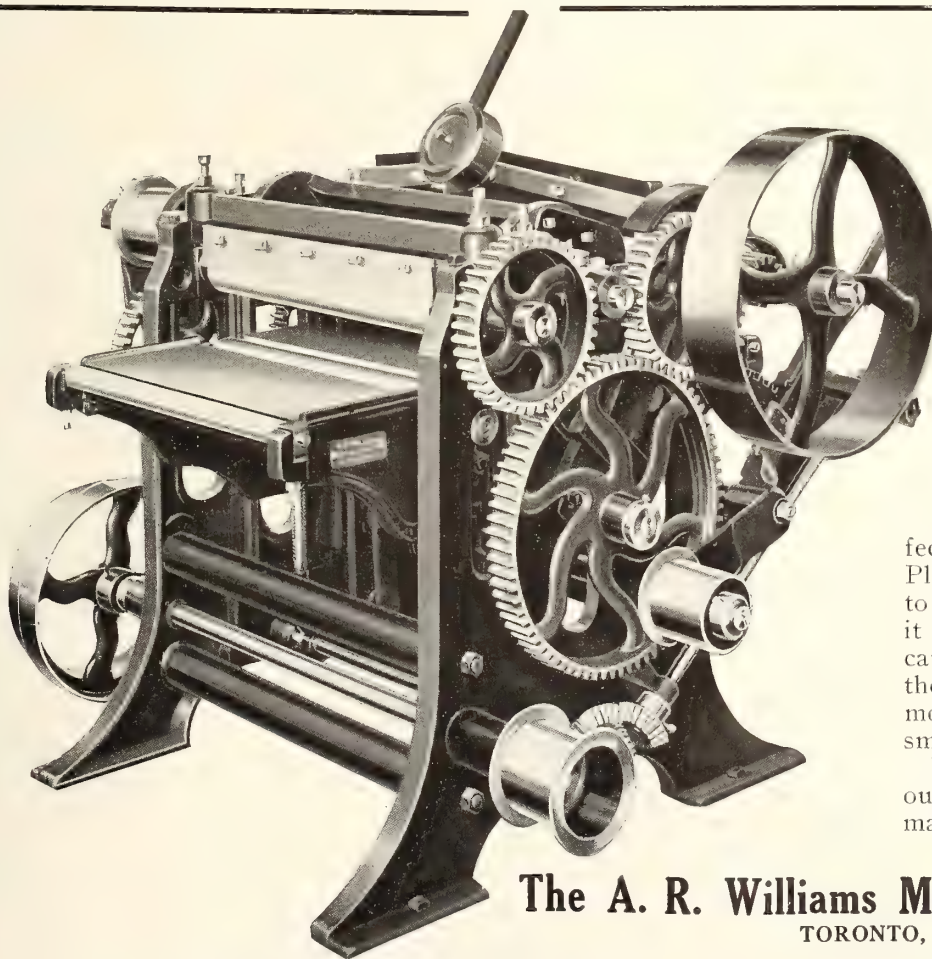
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Pugmill, Canton Special Auger Brick Machine, Automatic Side Cutter, Re Press, Large Exhaust Fan, Large Induction Fan, Planers, Moulders, Veneer Presses, Door Clamp, Shapers, Tenoner, Ripsaws, Bandsaws, Engines, etc.

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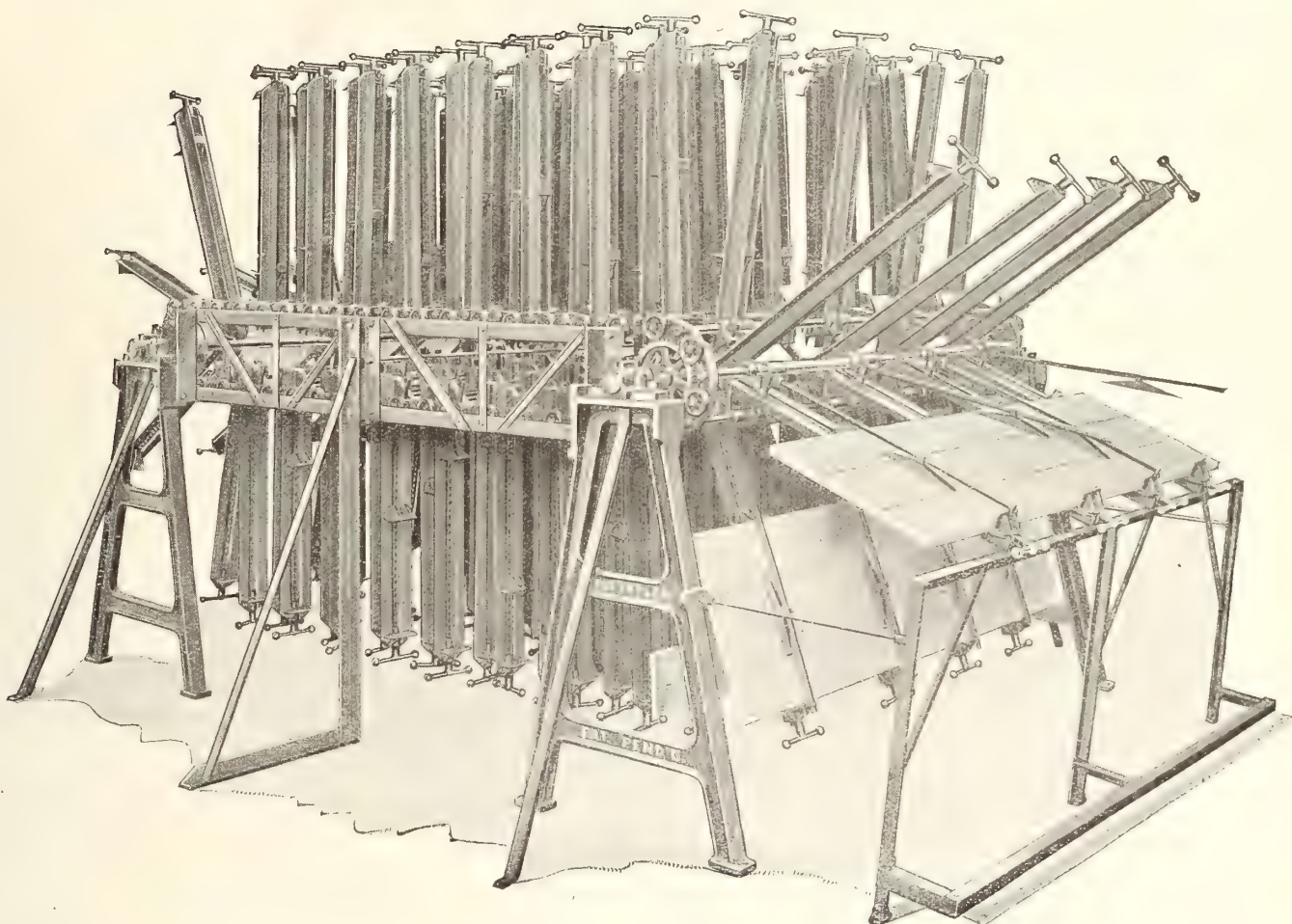
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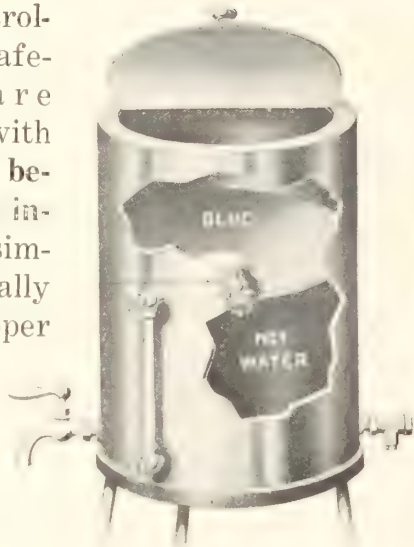
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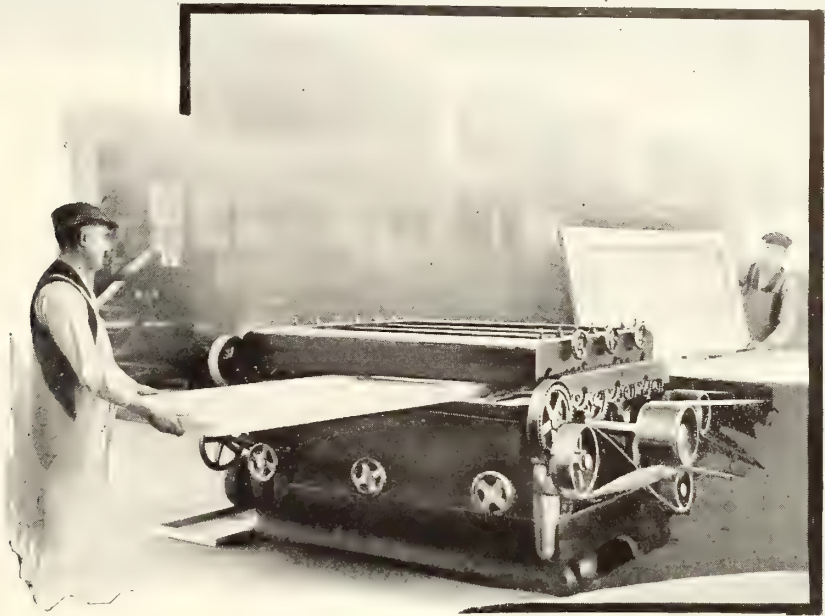
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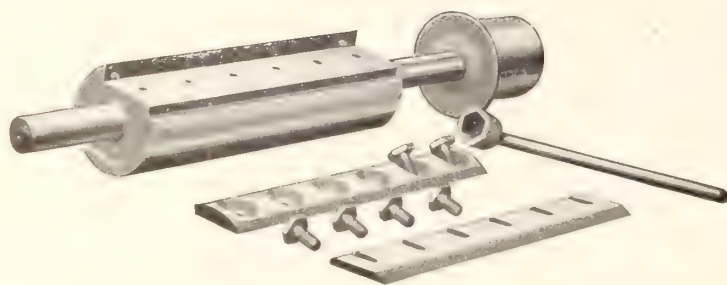
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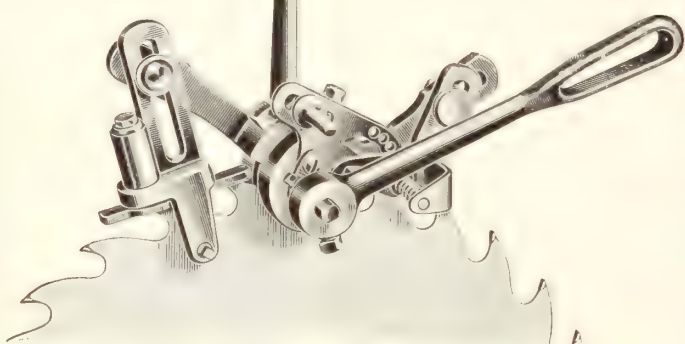
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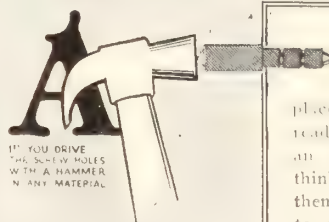


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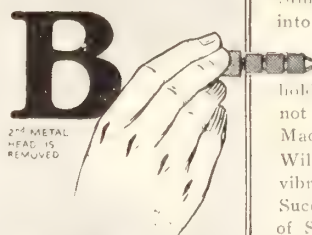
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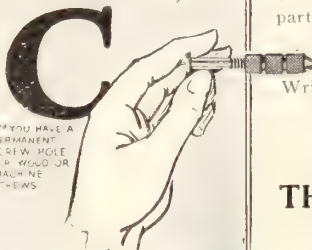
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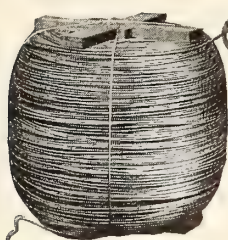
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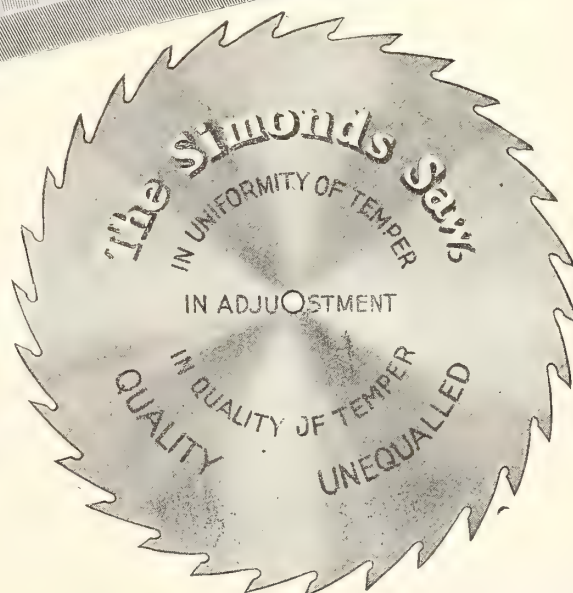
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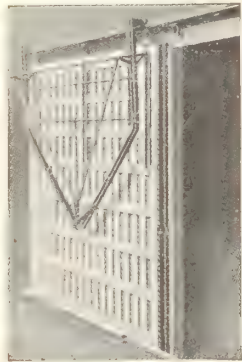
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See That
Square Hole?



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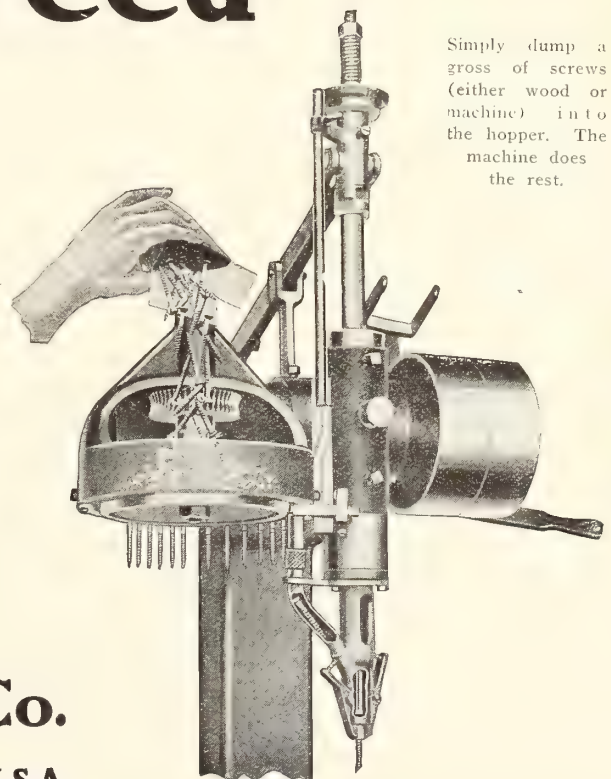
Write us today for further particulars regarding the better method of driving screws and a real system for cutting down your labor expense.

The Reynolds Machine Co.

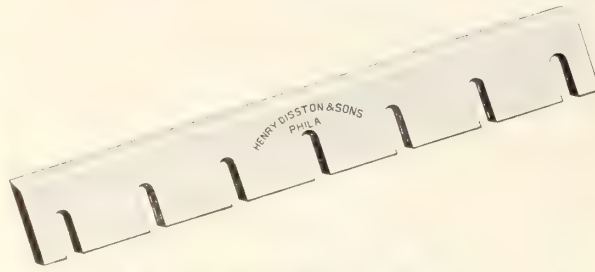
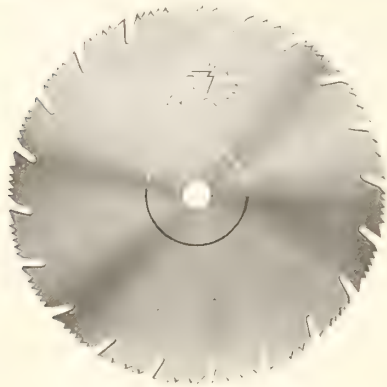
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Simply dump a
gross of screws
(either wood or
machine) into
the hopper. The
machine does
the rest.



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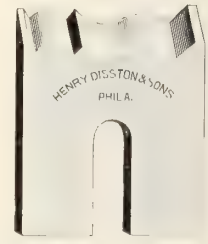


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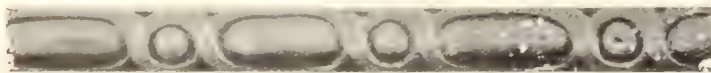
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M 76



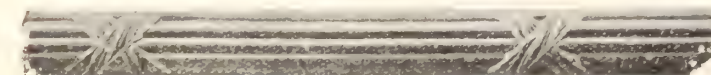
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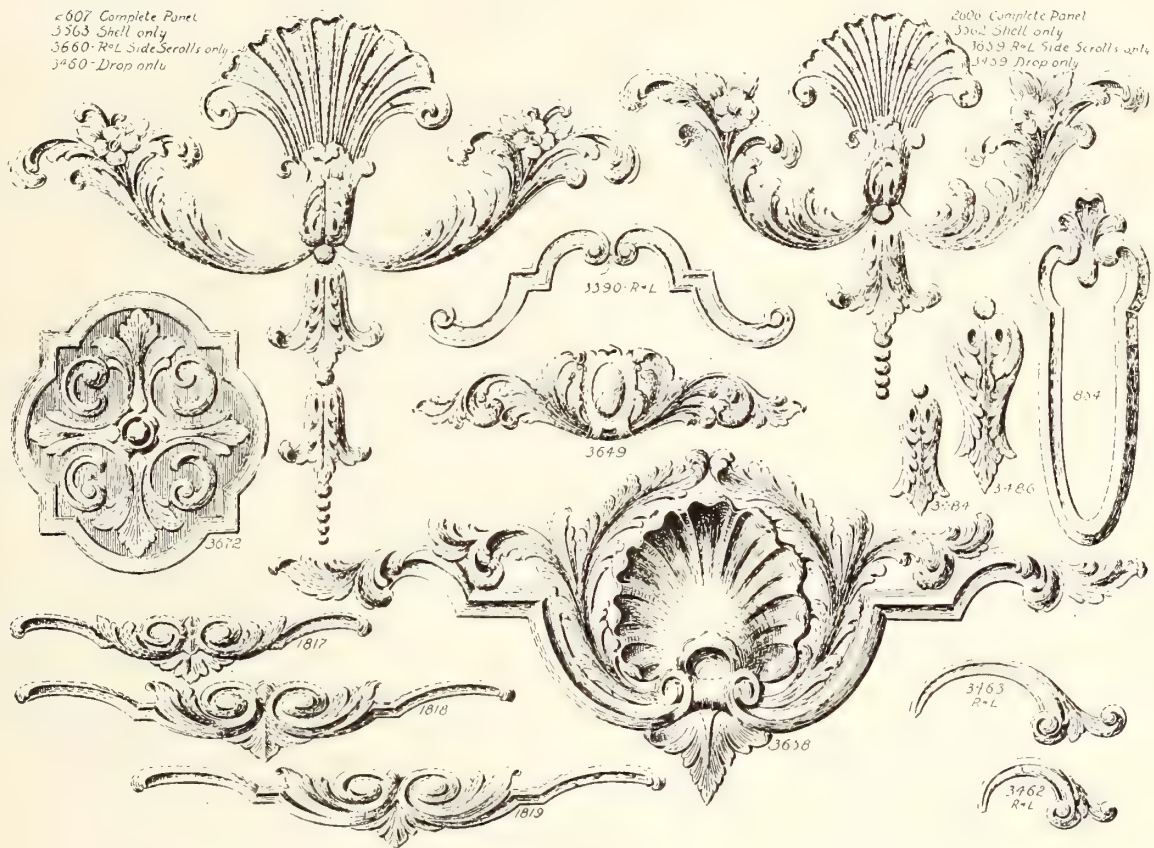
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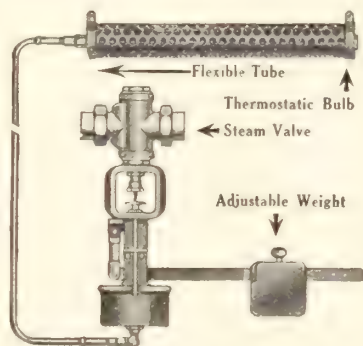
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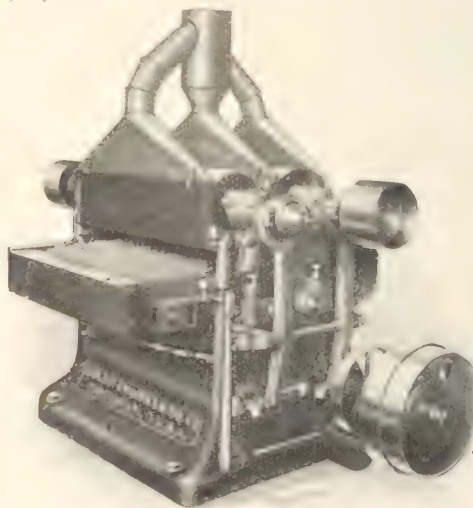
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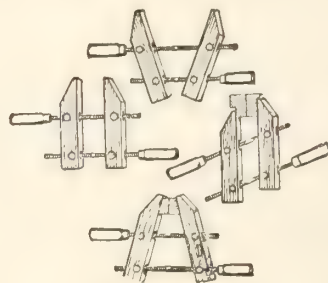
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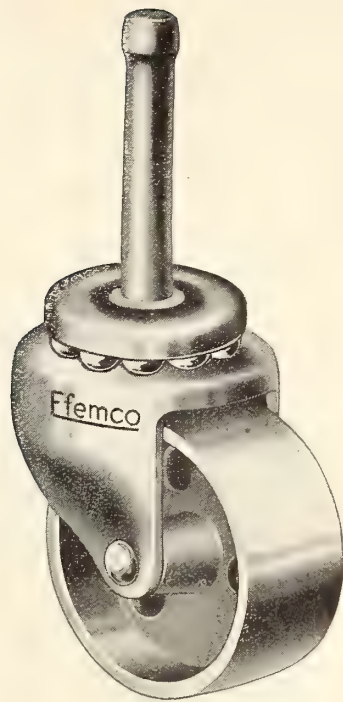


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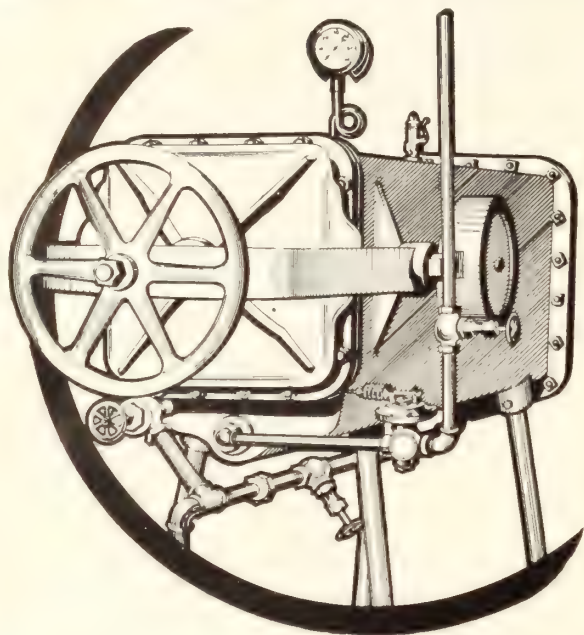
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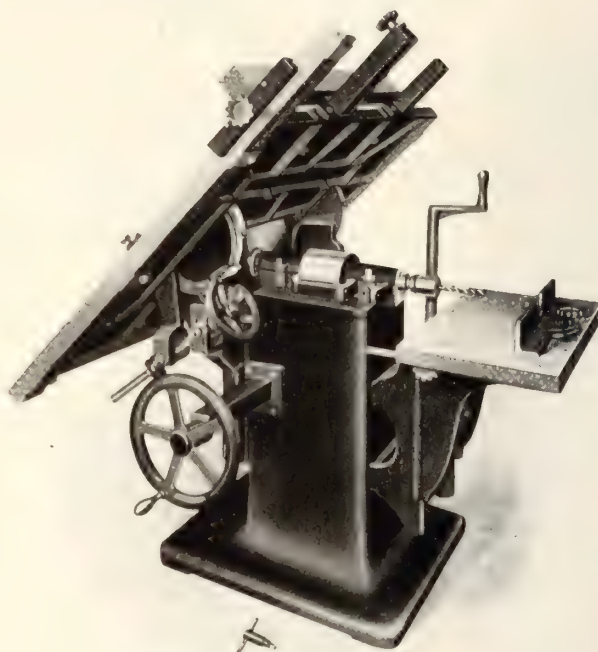
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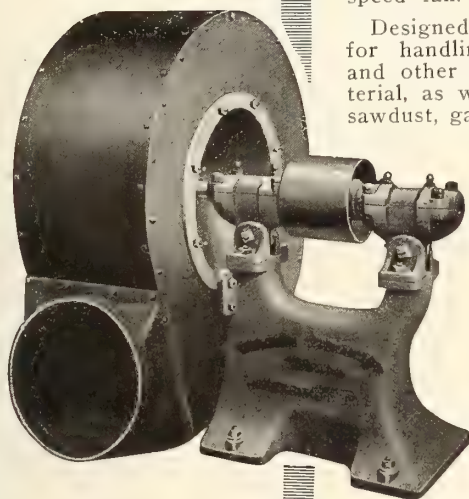
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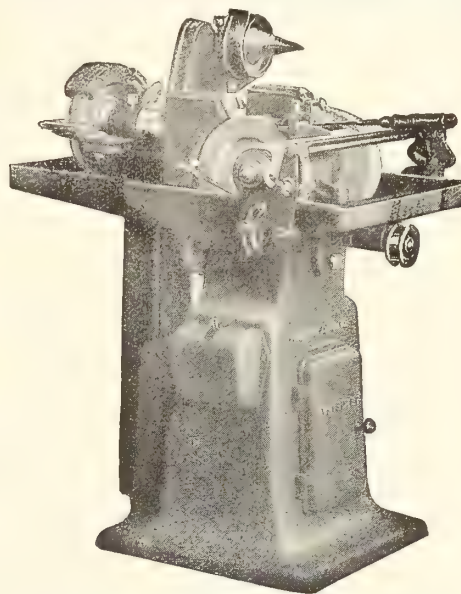
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Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Whitney & Son, Baxter D., Winchendon, Mass.

HARDWARE

Laidlaw Bale-Tie Co., Hamilton, Ont.

HARDWOOD LUMBER

Aberdeen Lumber Co., Pittsburgh, Pa.
American Hardwood Lumber Co., St. Louis, Mo.
American Oak Mfrs.' Assn., Memphis, Tenn.
American Walnut Association, Washington, D.C.
Anderson-Tully Co., Memphis, Tenn.
Astoria Mahogany Co., New York, N.Y.
Atlantic Lumber Company, Toronto, Ont.
Barr-Holaday Lumber Co., Greenfield, Ohio.
Boland Lumber Co., Grand Rapids, Mich.
Bonner & Sons, J. H., Memphis, Tenn.
Brown & Company, Geo. C.
Burns & Knapp Lumber Co., Conneautville, Pa.
Bury & Company, Robert, Toronto, Ont.
Buskirk Rutledge Lumber Co., Cincinnati, O.
Cornelius Lumber Co., St. Louis, Mo.
Canadian General Lumber Co., Toronto, Ont.
Churchill-Milton Lumber Co., Louisville, Ky.
Darby Hardwood Lumber Co., Memphis, Tenn.
Des Moines Sawmill Co., Des Moines, Iowa.
Dooley Lumber Co., F. T., Memphis, Tenn.
Eakin Lumber Co., Weston, W.Va.
Evansville Band Mill Co., Evansville, Ind.
Felger Lumber & Timber Co., Memphis, Tenn.
Gayoso Lumber Co., Memphis, Tenn.
Hart & McDonagh, Toronto, Ont.
Heeney, Percy E., Kitchener, Ont.
Holly Ridge Lumber Co., Louisville, Ky.
Hunt, Wellington & Smith, Nashville, Tenn.
Hyde Lumber Co., South Bend, Ind.
Kersley, Geo., Montreal, Que.
Korn-Conkling Co., Cincinnati, Ohio.
Kosse, Shoe & Schleyer Co., Cincinnati, O.
Kraetzer-Cured Lumber Co., Greenwood, Miss.

Lawrence & Co., P. J., St. Louis, Mo.
Long-Knight Mfg. Co., Indianapolis, Ind.
McLennan Lumber Co., Montreal, Que.
Memphis Band Mill Co., Memphis, Tenn.
Mowbray & Robinson, Cincinnati, Ohio.
Osgood Lumber Company, Osgood, Ind.
Paepcke Leicht Lumber Co., Chicago, Ill.
Pedwell Hardwood Lumber Co., Toronto, Ont.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City.
Pickrel Walnut Co., St. Louis, Mo.
Probst Lumber Co., Cincinnati, Ohio.
Reese Sherriff Lumber Co., Williamsport, Pa.
Shafer Hardwood Co., John I., South Bend, Ind.

Sondheimer Co., E., Memphis, Tenn.
Spencer, C. A., Montreal, Que.
Stark & Co., Jas. E., Memphis, Tenn.
Steele & Hibbard Lumber Co., St. Louis, Mo.
Stimson & Co., J. V., Owensboro, N.Y.
Sullivan, Frank, Buffalo, N.Y.
Thompson, Katz Lumber Co., Memphis, Tenn.
Wayne Lumber Co., New York, N.Y.
Williams Lumber Co., Fayetteville, Tenn.

HYDRAULIC VENEER PRESSES

Perrin & Company, Wm. R., Toronto, Ont.

KNOBS

Waddell Mfg. Co., Grand Rapids, Mich.

JOINTERS

American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

KNIVES (Planer and others)

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

LATHES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Trevor Mfg. Co., Lockport, N.Y.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.

LEATHER

Fibro Mfg. Company, New York, N.Y.

MACHINE KNIVES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Galt Knife Company, Galt, Ont.
Peter Hay Knife Company, Galt, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
White Co., L. & I. J., Buffalo, N.Y.
Yates Machine Co., P. B., Hamilton, Ont.

METALINE NAILS

Canada Tack & Nail Co., Hamilton, Ont.
Dominion Tack & Nail Co., Galt, Ont.

MITRE SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.

MOTOR TRUCK EXTENSIONS

Swedish Crucible Steel Co., Windsor, Ont.

MOULDERS

Hall & Brown Woodworking Machine Co., St. Louis, Mo.

MOULDINGS

Waddell Mfg. Co., Grand Rapids, Mich.

MULTIPLE BORING MACHINES

Root Company, B. M., York, Pa.

MULTIPLE BOXING MACHINES

Fay & Egan Co., J. A., Cincinnati, Ohio.
Nash, J. M., Milwaukee, Wis.

NAILS

Laidlaw Bale-Tie Co., Hamilton, Ont.

OIL STONE GRINDERS

Mummert-Dixon Co., Hanover, Pa.

PANELS

Waetjin & Co., L., Milwaukee, Wis.

PATTERN SHOP MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PERIOD MOULDINGS

Waddell Mfg. Co., Grand Rapids, Mich.

PERIOD TURNINGS

Walter & Sons, J., Kitchener, Ont.

PLANER KNIVES (and others)

Galt Knife Co., Galt, Ont.
White Co., L. & I. J., Buffalo, N.Y.

PLANERS

American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PLANING MILL MACHINERY

American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

PORTABLE DRILLS

Wisconsin Electric Co., Wisconsin, U.S.A.

PRESSES (Veneer)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Co., Wm. R., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.

RESAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

RIM AND FELLOE MACHINERY

Defiance Machine Works, Defiance, Ohio.
Fay & Egan Co., J. A., Cincinnati, Ohio.

RIP SAWING MACHINES

American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A., Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Co., Salem, Ohio.
Yates Machine Co., P. B., Hamilton, Ont.

ROSETTES

Waddell Mfg. Co., Grand Rapids, Mich.

RUBBING MACHINES

DeVilbiss Mfg. Co., Toledo, Ohio.
Mattison Machine Works, Rockford, Ill.
Paasche Air Brush Co., Chicago, Ill.

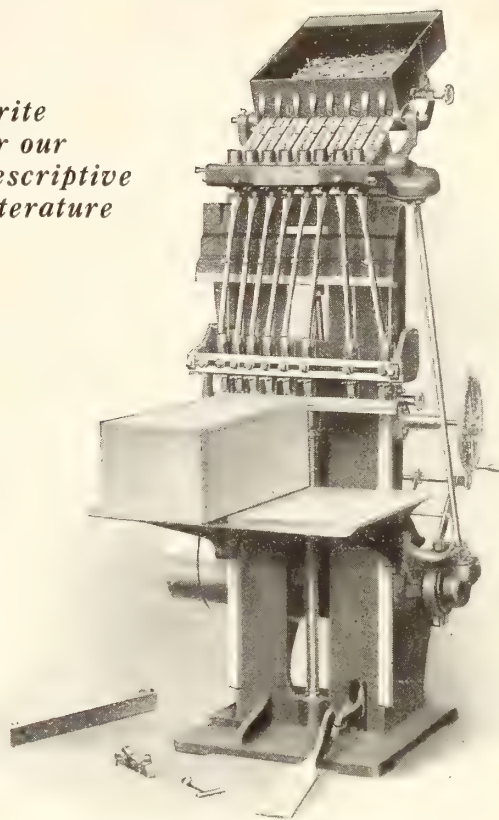
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Cowan & Company, Galt, Ont.

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The Morgan Automatic Nailing Machine will prove a good investment for any woodworking plant. It drives nails anywhere and in any kind of wood, accurately, effectively and faster than it is possible to do it by hand. It makes money for Box Factories, Canning Factories, Cabinet Factories, Furniture Factories, etc.

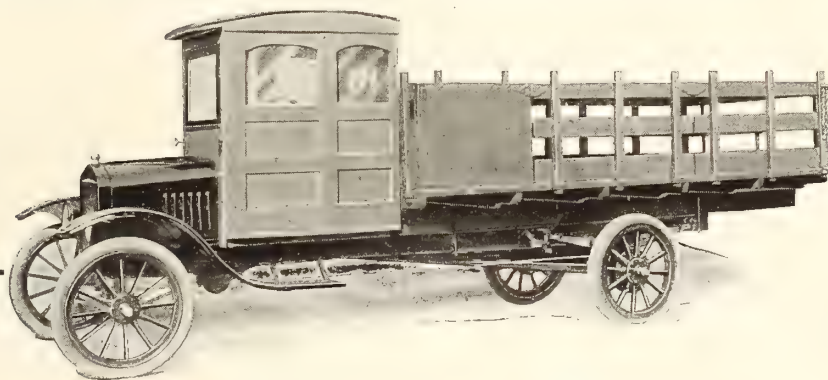


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Langmuir Manufacturing Company, Toronto.
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164 St. James Street, MONTREAL

"Canadian Woodworker" Buyers' Directory—Continued

SANDERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Nash, J. M., Milwaukee, Wis.
Preston Woodworking Machinery Company, Preston, Ont.
Solem Engineering Co., Sheboygan, Wis.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SASH, DOOR & BLIND MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Mattison Machine Works, Rockford, Ill.
Preston Woodworking Machinery Company, Preston, Ont.
Wallace & Co., J. D., Chicago, Ill.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SAWS

Atkins & Co., E. C., Indianapolis, Ind.
Radcliff Saw Mfg. Company, Toronto, Ont.
Shurly-Dietrich, Ltd., Galt, Ont.
Silver Mfg. Company, Salem, Ohio.
Simonds Canada Saw Co., Montreal, Que.
Wallace & Co., J. D., Chicago, Ill.

SAW BENCH

Sidney Machine Tool Co., Sidney, O.

SAW FITTING TOOLS

Crowell, D. J., Buffalo, N. Y.

SAW SWAGES

Cowan & Company, Galt, Ont.
Crowell, J. D., Buffalo, N. Y.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Radcliff Saw Mfg. Co., Toronto, Ont.

SAW TABLES

Canada Machinery Corporation, Galt, Ont. ..
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Silver Mfg. Company, Salem, Ohio.
Wallace & Co., J. D., Chicago, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

SCRAPING MACHINES

Canada Machinery Corporation, Galt, Ont. ..
Garlock-Walker Machinery Co., Toronto, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.

SCREW DRIVING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Reynolds Machine Co., Massillon Ohio.

SCREW HOLES

Stine Screw Holes Co., Waterbury, Conn.

SCROLL SAWS

Canada Machinery Corporation, Galt, Ont. ..
Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SECOND-HAND MACHINERY

Cowan & Company, Galt, Ont.
Garlock-Walker Machinery Co., Toronto, Ont.
Petrie, H. W., Toronto, Ont.
Williams Machinery Co., A. R., Toronto, Ont.

SHAPERS

American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Sons, Baxter D., Winchendon, Mass.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

SHAVING COLLECTORS

Canadian Bolwer & Forge Co., Kitchener, Ont.
Toronto Blower Company, Toronto, Ont.

SPRING MATTRESS FRAMES

Newman Sons, J. P., Warton, Ont.

STAINS

Ault & Wiborg, Toronto, Ont.
Marietta Paint & Color Co., Marietta, Ohio.
Shannon Co., Ed. J., Cincinnati, Ohio.

SINGLE SPINDLE BOXING MACHINES

Canada Machinery Corporation, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.

STAVE SAWING MACHINE

Whitney & Son, Baxter D., Winchendon, Mass.

SURFACERS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Petrie, H. W., Toronto, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

SWING SAWS

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Radcliff Saw Mfg. Co., Toronto, Ont.
Silver Mfg. Co., Salem, Ohio.
Tannewitz Works, Grand Rapids, Mich.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE LEG LATHES

Fay & Egan Co., J. A., Cincinnati, Ohio.
Mattison Machine Works, Rockford, Ill.
Whitney & Son, Baxter D., Winchendon, Mass.
Yates Machine Co., P. B., Hamilton, Ont.

TABLE SLIDES

Walter & Company, B., Wabash, Ind.

TEMPERATURE REGULATORS

Canadian Powers Regulator Co., Toronto, Ont.

TENONING MACHINES

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Jackson, Cochrane & Company, Kitchener, Ont.
Preston Woodworking Machinery Company, Preston, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TIME CLOCKS

International Business Machines Co., Toronto, Ont.

TRIMMERS

American Woodworking Machinery Company, Rochester, N. Y.
Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Fay & Egan Co., J. A. Cincinnati, Ohio.
Garlock-Walker Machinery Co., Toronto, Ont.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Preston Woodworking Machinery Company, Preston, Ont.
Williams Machinery Co., A. R., Toronto, Ont.
Yates Machine Co., P. B., Hamilton, Ont.

TRUCKS

National Dry Kiln Co., Indianapolis, Ind.

TWINES & WEBBING

Daly & Morin, Limited, Montreal.
Doon Twines, Ltd., Kitchener, Ont.

UPHOLSTERERS' SPRINGS

Daly & Morin, Ltd., Montreal.

UPHOLSTERERS' TACKS & NAILS

Canada Tack & Nail Co., Hamilton, Ont.
Daly & Morin, Ltd., Montreal.

VARNISHES

Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg Company, Toronto, Ont.
Penfound Varnish Co., Toronto, Ont.

VARNISH DRYERS

Nicholls Co., A. S., New York, N.Y.

VARNISH SPRAYERS

DeVilbiss Mfg. Co., Toledo, Ohio.
Paasche Air Brush Company, Chicago, Ill.

VENEERS

Astoria Mahogany Co., New York, N.Y.
Batesville Lumber & Veneer Co., Lawrenceburg, Ind.
Bury & Company, Robert, Toronto, Ont.
Central Lumber Co., Indianapolis, Ind.
Christmann Veneer & Lumber Co., St. Louis, Mo.
Dean Spicker Company, Chicago, Ill.
Empire Veneer Company, Chicago, Ill.
Evansville Veneer Co., Evansville, Ind.
Freiberg Lumber Co., Cincinnati, Ohio.
Hartzell, Geo. W., Piqua, Ohio.
Hoffman Bros. Company, Fort Wayne, Ind.
Geo. Kesley, Montreal, Que.
Korn-Conkling Co., Memphis, Tenn.
Long-Knight Lumber Co., Indianapolis, Ind.
Memphis Veneer & Lumber Co., Memphis, Tenn.
Nartzik, J. J., Chicago, Ill.
National Veneer & Lumber Co., Indianapolis, Ind.
North Vernon Lumber Co., North Vernon, Ind.
Northwestern Cooperage & Lumber Co., Gladstone, Mich.
Ohio Veneer Company, Cincinnati, Ohio.
Penrod-Jurden Co., Memphis, Tenn.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Roberts & Co., John N., New Albany, Ind.
Southern Veneer Mfg. Co., Louisville, Ky.
Thompson Veneer Co., W. T., Edinburgh, Ind.
Toronto Veneer Company, Toronto, Ont.
Underwood Veneer Co., Wausau, Wis.
Veneer Manufacturers Co., Chicago, Ill.
Wactjen & Co., George L., Milwaukee, Wis.

VENEER TAPE

Ideal Coated Paper Co., Brookfield, Mass.

VENTILATING APPARATUS

Canadian Blower & Forge Co., Kitchener, Ont.

VENEER JOINTERS

Garlock-Walker Machinery Co., Toronto, Ont.

VENEER MACHINERY

Garlock-Walker Machinery Co., Toronto, Ont.

VENEER PRESSES (Hand and Power)

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Farquhar Co., A. B., York, Penn.
Garlock-Walker Machinery Co., Toronto, Ont.
Jackson, Cochrane & Company, Kitchener, Ont.
Perrin & Company, Wm. R., Toronto, Ont.

VICES

Fay & Egan Co., J. A., Cincinnati, Ohio.

WOOD FINISHES

Adams & Elting Co., Chicago and Toronto.
Ault & Wiborg, Toronto, Ont.
Penfound Varnish Co., Toronto, Ont.

WALNUT LUMBER

American Walnut Association, Washington, D. C.
Des Moines Saw Mill Co., Des Moines, Iowa.
Penrod Walnut & Veneer Co., Kansas City, Mo.
Pickrel Walnut Company, St. Louis.

WIRE

Laidlaw Bale-Tie Co., Hamilton, Ont.

WOOD SCREWS

Robertson Mfg. Co., P. L., Milton, Ont.

WOOD TURPENTINE

Brown Corporation, Quebec, Que.

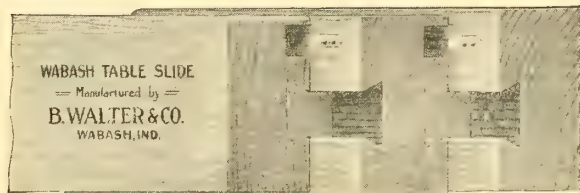
WOOD TURNING MACHINERY

Canada Machinery Corporation, Galt, Ont.
Cowan & Company, Galt, Ont.
Defiance Machine Works, Defiance, Ohio.
Hall & Brown Woodworking Machine Co., St. Louis, Mo.
Garlock-Walker Machinery Co., Toronto, Ont.
Mattison Machine Works, Rockford, Ill.
Yates Machine Co., P. B., Hamilton, Ont.

WORK BENCHES

Fay & Egan Co., J. A., Cincinnati, Ohio.

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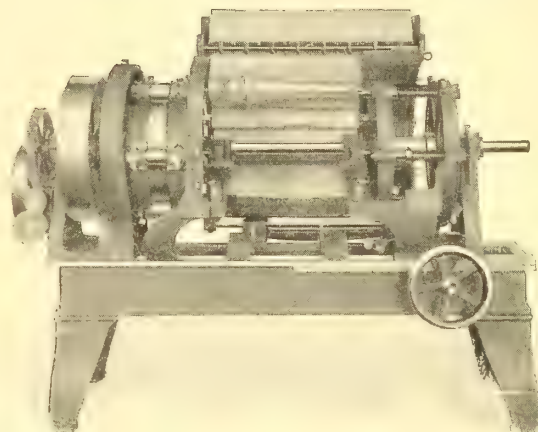
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Canadian Representative:

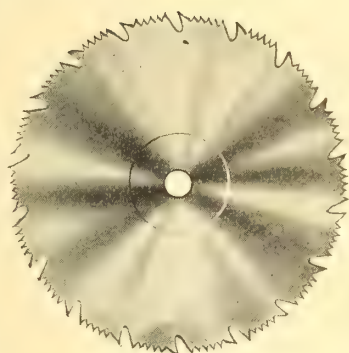
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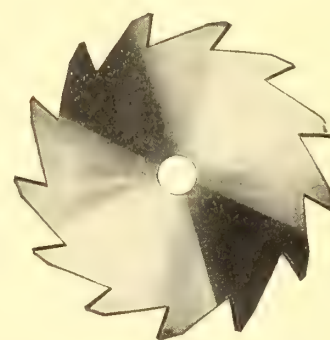
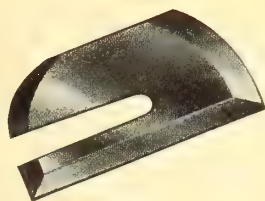
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Machine
Speed*

Conserving Labor

with Our

“138” Standard Hand Block Belt Sander

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Even a small boy can operate it successfully and do the work of 4 to 8 men sanding by hand.

Why not send a postal for our new “138” circular describing clearly how the saving in labor pays for this sander in a few weeks?

THIS machine, combining as it does, mile-a-minute sand belt travel with the principle of hand-sanding, makes the most practical all-round type of sander for the average shop. In a factory where high-paid cabinet makers waste at least a third of their time sanding and scraping by hand, this “138,” operated by ordinary workmen, will eliminate 90% of that waste.

Mattison Machine Works
Rockford, Illinois, U. S. A.

